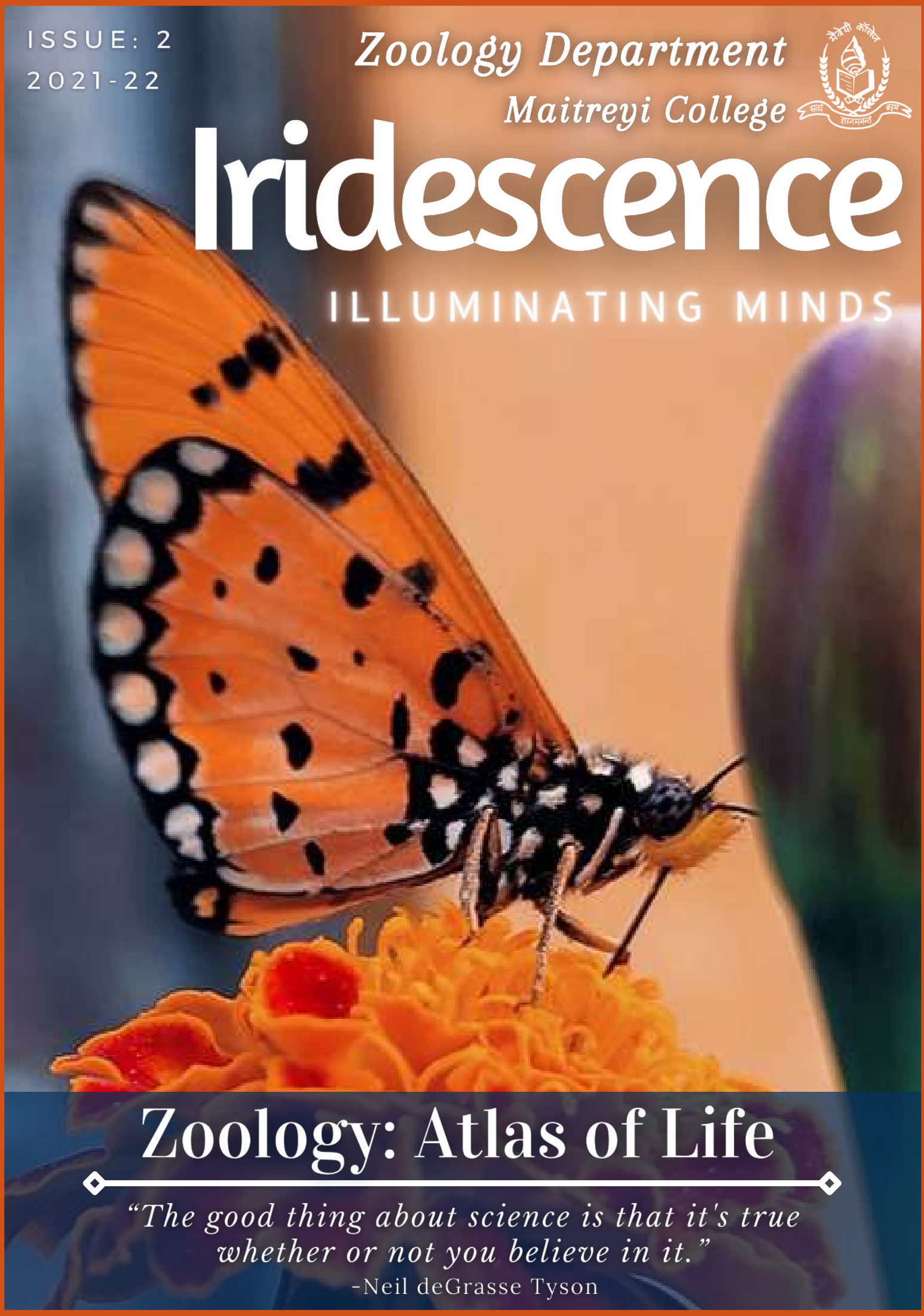
ISSUE: 2
2021-22

Zoology Department
Maitreyi College

Iridescence

ILLUMINATING MINDS



Zoology: Atlas of Life

"The good thing about science is that it's true whether or not you believe in it."

-Neil deGrasse Tyson

IRIDESCENCE: 2021-2022

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Maitreyi College
University of Delhi

Principal's Message

Dearest Readers,

I am bedazzled and pleased while releasing the second issue of Zoology Department magazine, Iridescence.

Iridescence keeps its promise to highlight the works of the incredibly outstanding Zoology and Life Sciences students as it did in the magazine's debut issue.

This year the magazine brings to its readers an assemblage of articles that are focused on the diversity of life forms and an array of infographics related to various aspects of science. The readers will relish the beauty of the multitude of students' artworks and photographs as much as they would gain from the words of wisdom from the department's alumnae.

I appreciate the efforts of the editorial team, advisory members, and all the contributing students for bringing out this widely diversified treasury of talent, and I encourage the future contributors to keep up with the spirit of the magazine!

Happy reading!

Prof. Haritma Chopra
Principal
Maitreyi College

EDITORIAL BOARD

Emerging from the perilous COVID-19, 'Iridescence' was a modest effort to develop ideas and thoughts that would foster and promote ingeniousness. The new edition aimed to manifest the pursuit of science, focusing on zoology as the grandeur in this view of life. It includes enriching literary and artistic sides driven by intellectual curiosity and exquisite craftsmanship by contributors and team members. Carefully curated with a harmonious blend of segments, it is bound to lure you in until the tail end.
Altogether it has been an enamoring and honoring ride to be a part of the team, including teachers, who collectively have brought this second edition of Iridescence to fruition. I wish Iridescence to continue radiating the splendor of science and wonder for years to come. Have a pleasant time reading!

Aditi Kumari
B.Sc. Life Science, III year

'*The faintest ink is more powerful than the strongest memory.*" No one can epitomize it better than the nostalgic feeling one gets while leafing through dusty old pages of the college magazine. The second edition of '***IRIDESCENCE***', not only is a conflux of minds but is an effort to synergize the conglomerate resilience that each member of the department has displayed over this span of one year. The magazine has been conscientiously and meticulously put together by the editorial board to portray the young minds and their perceptions of the world of science as they see it, in the form of articles, paintings, photographs, and a lot more. It fills my heart with immense joy and pride as I see the culmination of all the creations in the successful continuation of this glorious legacy. I enjoyed being a part of this journey and I hope the legacy of 'IRIDESCENCE' will be continued for the years to come. Happy reading!!

KRITI
B.Sc. (H) Zoology, II Year

The common thread between science and literature is the desire to understand, and in turn, be understood. Life is a series of mysteries waiting to be unraveled, and Iridescence gives one an opportunity to dive headfirst into the intersection between logic and expression and wonder and learn more about the world around us- an experience which is priceless. I am truly lucky to have had the opportunity to read all the beautiful contributions and witness how intricately and beautifully different human minds work. Here, you find people of reason who're also artists, who believe in the chemical and the cosmical, the methodical and the magical- a unique amalgamation which is rare, but which I'm very grateful to have been a part of. If there's one thing I want to say to our dearest readers, it's to keep reading, keep writing and keep being curious all day, every day. Hats off to the people I found here, and cheers to us wanderers of the universe!

Prashansa
B.Sc. (H) Zoology, II Year

Science at its core holds the essence of creativity, of going beyond your horizons, of questioning the unknown and then finding the answers! It has been an exhilarating and cathartic journey to be able to experience this joy of curating this magazine. As someone who's always been in awe of the crossroads between science and literature, it was an immense pleasure to be able to read and see the outpour of talent and passion from our fellow mates. I could proudly say this on the behalf of our editorial board that this magazine is close to our hearts and holds the power of creativity and curiosity from each one of the amazing people who worked and contributed to its inception. As you leaf through the magazine, we hope you get to see the potential of women in STEM, to see the passion each poem holds, the crux of each article and the warmth of every photograph.

Shreya Rawat
B.Sc. Life Science, III year

Designers

'***Iridescence***' is more than just the name of this magazine; it rings around everything from our experience curating it to your experience reading it.
From finding the perfect page template to making all the components of an article appear in harmony, the passion and dedication of this editorial team went from strength to strength and I am beyond grateful to be a part of it.
As the great *Aristotle* once said, '*the whole is more than the sum of its parts,*' each individual's contribution to the pages of this publication has not only combined it into a magazine but, more than that, created an essence that every person can feel while reading these pages and helped us preserve a small portion of the history of our esteemed Maitreyi College in these printed pages of ideas and memories.

Shreya Singh
B.Sc. Life Science, II Year
Designer

It is said that imagination itself lights the lamp around your darkness of illiteracy and lethargy. During the period of covid-19 life had become monotonous and there was constant fear and anxiety within one's mind. It was looming over us like a never ending cloud of darkness. Iridescence is made with the sheer will of the members of the editorial board to come up with an idea of creating a magazine that could be informative as well as fascinating with all the varieties of paintings and photographs and the vibrancy inside the magazine. It was tiring to come up with a magazine that had the wow factor as well as every detailed information that one would be fascinated towards. It's true that imagination itself can extinguish the creative block inside one's mind. As a member of this board I am truly blessed to have had the opportunity to work with such dedicated members as well as the honorable professors who have spared their time and patience to work with us to present the special creation of the department which takes one in a journey of inspiring tales to fun corner.

Ritupriya Basu
B.Sc. Life Science, I Year
Assistant Designer

Creative Team

Shruti Rani
B.Sc. Life Science, II Year

Arya Singh
B.Sc. (H) Zoology, I Year

Swati Gogoi
B.Sc. Life Science, II Year

Mahima Das
B.Sc. Life Science, II Year

Advisory Board

"We should not teach children the sciences but give them a taste for them.'

-Jean-Jacques Rousseau

So, finally, the second edition of Iridescence is out! We feel proud and delighted to be part of the second issue of our departmental e-magazine, IRIDESCENCE, around the theme of science. Standing by its name, the magazine portrays a beautiful collection of different genres of writing to understand the fascinating field of Life Sciences in general and Zoology in specific.

We are exhaling, relaxing and satisfied, as this was tougher than the first one. Tougher on many grounds: the new team of students who started their session virtually and then had to suddenly get used to going to college every day; the evolution of the magazine from a showcase of talent in all fields to now only sciences; lesser time frame as we waited for first-year students to join the college to start the proceedings of the magazine. These were just a few of the many other hurdles that we surpassed. And yes, we did surpass them; we, the tenacious editorial and creative team of students, the faculty advisory board, and especially the designers who brought the final form of the magazine for us.

Our students, as well as teachers, have contributed various dimensions of writing and art, which will provide information to our readers in an interesting manner or will give them a taste of science as Jean-Jacques Rousseau puts it. The magazine covers articles, infographics, poetry, artwork, travel blogs, did you know, fun corner, etc. to highlight the theme along with various activities of the department for the academic year.

Prof. Renu Gupta

Dr. Anshu Arora Anand

Dr. Archana Aggarwal

Dr. Jaspreet Kaur

The hard work and dedication of the editorial board under the able guidance of the advisory board played a key role in the creation, compilation, and presentation of the magazine. The contributions of faculty, students, alumni, and peers in the field are highly acknowledged. The collection compiled and edited by our illustrious students of the editorial board is highly commendable. It was an enjoyable experience and we sincerely wish that the readers would be intrigued by the content of the magazine.

Iridescence is a student-led publication run for, and by, students on campus. We welcome the multitude of voices that are contained within our small campus. Do you write poetry? Have a take on a scientific issue? Interesting journey? Art-skills? IRIDESCENCE is here! Whatever it's going to be, we hope you discover your creative (or serious) niche with us. We are grounded in sharing the views, perspectives, and stories of Maitreyi students. And this magazine wouldn't have been possible without the exquisite and ingenious contributions made by our students for the magazine this year.

We wish all the readers of our magazine a happy and enjoyable experience.
We hope to hear from you soon, and we welcome your feedback!

If you have any questions, suggestions, or concerns, please address them to zoomagazine2020@gmail.com

Thanks for being here and patient reading.

IRIDESCENCE 2021-22

STEMinist Era

INTERVIEW WITH DR. BHARTI SINGAL

An epitome of strength and passion, Dr. Bharti Singal is a multi-faceted gem currently making us all women scientists proud as a post-doctoral researcher at Department of Molecular and Cellular Biology, in University of California, Davis. Read on to learn how this remarkable scholar turned pain into power, and helps other young women unleash their power in the present day!

We, as children, always dream of becoming something. What led you into research? Was it always a childhood dream or did you acquire it on the way?

You'd be surprised to hear that I didn't even know what a researcher was when I was starting out. I had no idea what a scientist was, or did!

When I was in high school, like most Indian kids, I was interested in pursuing medicine. In my childhood, I used to visit hospitals because my father used to work in the administration team. I was always intrigued with the notion of helping people and society. In 9th standard, tragically, I lost my father due to medical negligence. It shattered my world. Before this, I was just studying, but now I had to take care of my family as we did not have any external support. I took up tutoring and prepared for my medical entrances on the side. I got selected to pursue BDS, but left it soon afterwards as it wasn't where my heart was. And so, I decided to opt for a B.Sc. in Life Science from Hansraj College. However, I dedicated all my time to freelance work in the form of article writing. I was quite diverted towards earning money to support my family, and didn't do much justice to my B.Sc., so my mother pushed me to pursue alternatives and fill the form for a B.Ed.

B.Ed. changed my life! It triggered serious introspection in me, and I came to realise my affinity for science. Even at this stage, I did not know what a researcher was. As a science teacher later on, I came across science books with mentions of Nobel Laureates and their contributions which piqued my interest. Eventually, I started studying what a scientist is, what they do, and how to be one- eventually leading me to opt for a master's degree, because I had always been curious and I did not only want to produce a repetition of what I was learning in books. Research has been an exciting career for me. And I believe it fulfils my dream of having a doctor in front of my name. Even though I did not pursue a conventional path, I earned a doctorate in philosophy, and found my way back to my dream of helping people.

What was the turning point in your life in your work as a scientist?

I started research in a true sense when I was in my masters. Though my professor at the time didn't have much faith in me, he took me in due to my persistence. I worked hard and shone out as the gold medalist in my masters. My professor's belief in me rose significantly, proving that a student who did not look like a conventional "geek" could be sincere too. He gave me the opportunity to choose a topic- I read research papers and felt myself gravitating towards infectious diseases as I was always drawn to healthcare. We published our first paper and I got in touch with more researchers, which helped broaden my horizons. I took up internships outside my institution and it only made my fervour more ardent. I applied for my Ph.D. in infectious diseases in Singapore, focusing on tuberculosis. I explored multi-faceted subjects like bioinformatics, biophysics and biochemistry during my Ph.D., which gave me a new-found flexibility and an adaptive mindset towards research.

What is your favourite part in your life as a researcher?

My favourite part is definitely that we get to find answers to questions that nobody may have thought of before. In a lab, we are constantly learning- everytime we purify a new protein or describe something new, it leaves me in awe of all the novel things we get to see everyday. Moreover, the best part is that we have the opportunity to do something which has a positive

impact on lives. I'm working on neurodevelopment disorders and other genetic disorders that affect children and I think any study that helps us understand the body, is vital.

What are some recreational activities that you enjoy beyond your research?

Right from my school days, I identify myself as a versatile person, and I like to find ways to keep all my passions alive. I like sports and brought glory to my school as a basketball player. Dancing leaves me relaxed and content; thus, I actively took part in cultural events and performed as a dancer even till my Ph.D. Plus, I like to sketch. Additionally, as a travel junkie, exploring new places and cultures refreshes me. Most of all, I relish volunteering and devoting my time to social work to help people in my full capacity. For this reason, I co-developed and designed 'Kalpana' as a core member of VigyanShaala International NGO, to promote women in STEM. The first cohort was launched in October 2020, followed by a second in May 2021. The program aided 250+ girls across India from diverse STEM fields with the help of global expert mentors. Currently, I'm volunteering at 'New York Academy of Sciences'. I've also started BioXspace with a vision of promoting interdisciplinary sciences. As a meritorious student, I received Udayan Shalini fellowship by Udayan Care for 5 years. The fellowship provided us with financial support, and the exposure also aided my personal growth and development. Dr. Kiran Modi, the founder of the trust, remains one of the biggest inspirations of my life and pushes me to be a part of global leadership programmes.

Which phase in your life has been the most challenging?

It was definitely when I lost my father. He was my biggest pillar of strength. He always countered those who pointed out that he doesn't have a son with '*Meri betiyaan beton se bhi aage niklengi*'. (My daughters will reach greater heights than any son). It gave me strength, and I hope I have and will continue to make him proud. After his passing, my mother kept empowering us to aim high. It's the support I receive from my family and now my in-laws too, that keeps me going, and I aspire to be able to help others too in my journey.

What advice would you give to your younger self?

In hindsight, I would tell my 19 year-old self to not give up on her dreams. Moreover, I'd say the biggest key is to be resilient. We need to believe in ourselves, even in the face of darkness, to succeed. One should not leave hope because of one letdown, even if it completely crushes you. You should have faith in yourself because through that experience, you become stronger and come out with bucketfuls of wisdom that help you a lot, further in your life. In my B.Ed., we were taught the teachings of Rabindranath Tagore and Mahatma Gandhi, which encouraged us to keep a self-reflection journal where we could write our reflections for the day. And so, I always suggest to maintain a personal mini-diary, where you journal about your day, achievements, new learnings and ideas, or simply vent and clear out your mind in a rut.

There are going to be a lot of students who would relate to, and feel inspired by your story. What according to you are some skills and practices that they should invest in to become a successful scientist?

A scientist always stays curious and constantly enquires. Age is not a barrier, so keep experimenting and exploring in your own ways. Scientists are watchful scholars, so all you have to do is, be observant, inculcate the habit of reading and raise appropriate questions. With patience and perseverance, you're sure to soar high!

IRIDESCENCE 2021-22

ARTICLE REALM

Is Immortality Pragmatic? Featuring Jellyfish

Image source: https://www.mexicodesconocido.com.mx/las-playas-bioluminiscentes-de-holbox.html

While humans are far from conquering death, the only species known to have discovered the secret to immortality is a primitive critter- *Turritopsis dohrnii*, a jellyfish. Let's read on to find out more about these marvelous organisms.

Lacking brains, bones, blood, or even hearts, jellyfish are among the simplest creatures in the animal world. Comprising over 2,000 species placed under two different biological phyla, 'jellyfish' is a broad term used for Cnidarians and comb jellies (phylum Ctenophora). They've inhabited the oceans for at least half a billion years, and are still flourishing. The bioluminescent attribute of jellyfish emanates a gleaming bluish hue over the ocean, attracting travelers to experience a spectacular view (from afar).

The green fluorescent protein which is used by some species to cause bioluminescence, has led to many scientific breakthroughs in recent years. Moreover, certain species of jellyfish are also considered a delicacy in some Asian countries. They are regarded as rich sources of proteins and fatty acids.

Jellyfish aren't actually fish, but a diverse group of gelatinous animals. Unlike fish that have backbones, jellyfish are invertebrates. To avoid perplexity, the recent term 'sea jellies' has been introduced by scientists.

Jellyfish come in a variety of colors and proportions; ranging from microscopic expanses to the colossal size of a blue whale. Apart from a few sessile forms, they are mainly free-swimming marine animals with umbrella-shaped bells and trailing tentacles. A stalk-like structure called the manubrium extends downward from the center. Jellyfish are composed of three layers: an outer layer, called the epidermis; a middle layer made of a thick, elastic, jelly-like substance called mesoglea; and an inner layer, called the gastrodermis. 95% or more of the mesogloea consists of water held together by protein fibres. The simple digestive cavity of a jellyfish acts as both its

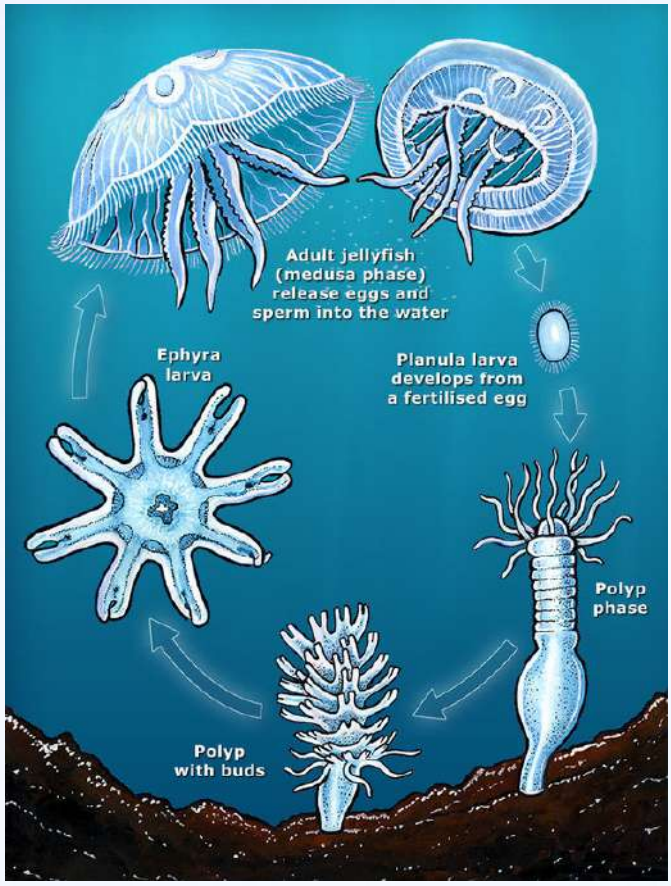


Image source:
https://teara.govt.nz/en/diagram/5355/jellyfish-life-cycle

stomach and its intestine, with one opening serving the function of the mouth and the anus. An elementary nervous system, or nerve net, enables jellyfish to smell, detect light, and respond to other stimuli. Characteristic radial symmetry allows jellyfish to detect and respond to food or danger from any direction.

The life cycle of a jellyfish includes both sexual and asexual phases. They are usually unisexual (with occasional hermaphrodites). The adult, or medusa, stage of a jellyfish can reproduce sexually by releasing sperm and eggs into the water, which then develop into larval planulae and turn into polyps. The polyps bud into ephyrae and then transform into adult medusae. At the polyp stage, jellies resemble tiny sea anemones and reproduce asexually by strobilation (transverse fission).

The lifespan of jellyfish varies from one species to another. *Turritopsis dohrnii*: the 'biologically immortal' jellyfish can reverse aging by a process called transdifferentiation, wherein under certain circumstances, it can transform from medusa stage back to the polyp stage, thereby escaping death.

The jellyfish sting comes from tiny nematocysts, or stinging cells, found on its body. When triggered, these cells eject poison-tipped barbs that help them capture prey and defend themselves. While some jellyfish stings barely tingle, stings from the box jellyfish or Portuguese man-of-war can result in severe pain and, in some rare cases, even death. In fact, box jellyfish are the most venomous marine animals in the world. So the next time you're on a beach and you see a glimmer of sun illuminate a gelatinous blob, turn tail and take to the woods!

ADITI KUMARI
B.Sc. Life Science
III Year

Can an Egret be friends with a Sheep? A look at Commensalism

On a bright sunny day, I was strolling in my neighborhood when I observed some sheep in a field, eating grass. Excited, I went close enough to take a good look at them and click pictures, but something caught my attention. Along with the sheep, there were some white egrets peering at the ground. When I witnessed this scene, I remembered reading about such an occurrence in my 12th class Biology book in the chapter ''Organisms and Population''. This relationship between the sheep and white egret is termed as Commensalism (+, 0 relationship) where one species benefits while the other is neither harmed nor profited. The word "commensalism" comes from the Latin word '*commensalis'* meaning 'to share a table'. This term was given by Pierre-Joseph van Beneden, a prominent zoologist from Belgium.

Image credit: Suryanshi Anand, B.Sc. (H), I year

Cattle egrets and cows are one of the principal examples of commensalism- when cattle graze on fields for their food, the insects nestling on the grass move out, letting the egrets easily grab and eat them. Interestingly, it was my first time seeing egrets feeding along with the sheep instead of the cows. It struck me because I had never read or seen any pictures on the internet of egrets huddled with sheep. A small yet fascinating observation, it made me realize that there is so much more in the world that goes unnoticed and books can only narrate a fraction of the vast variety of interactions in the environment- there is always so much to explore and experience on our own if we have the curiosity to look beyond our prescribed texts.

This little experience led me to delve a little more into the topic of population interactions- and before I knew it, I spent countless hours searching for similar interactions in the wild.
One can easily find orchids hanging around the branches of a tree, and for most of us, this won't be a very special sight, but

that changes once a keen interest has been ignited. The majority of the Orchids (Orchidaceae) are epiphytes, which means they grow on other plants. They benefit from the trees as they easily take nutrients from the atmosphere, collect rainwater in their spongy roots, and thus, don't have to compete for resources at all- what a remarkable little creature dodging the dictates of nature!

Upon further reading, I found more and more examples. The relationship between whales and barnacles is a great example of what takes place in the aquatic world. It comes under Phoresy commensalism, where barnacles feed on food provided by the whale, a filter-feeding animal that swims through a large number of planktonic creatures in the sea regularly. Barnacles benefit from whales as they easily move, eat and breed, and are unlikely to notice guests habituating their bodies.

Scientists have discovered a remarkable pattern in which specific types of barnacles interact with specific species of whales, most likely as a factor of each species' geographic location. The barnacle *Coronula diadema,* for example, has only been found on humpback whales in the Arctic seas around Scandinavia and the east coast of North America, while *Cryptolepas rhachianecti* has only been seen on grey whales in the northern Pacific Ocean.

There are many other examples of commensalism- but it is hard to tell if only the commensal is benefiting without affecting the host, because such lines are often blurred in nature. Sometimes, the host can benefit, or be affected negatively as well, changing the overall nature of the interaction.

Image sources:
https://saveourseas.com/sosf-shark-education-centre/amazing-ocean-relationships/
https://www.123rf.com/photo_20745954_wild-orchid-on-the-tree-branch.html

It is always fascinating to me how nature's work and interactions, although very complex, are intertwined with each other in such a beautiful symphony. There is a reason for the existence of these incidences, and some meaning behind each and every interaction in nature, no matter how small or big. This little expedition led me to realize that there's so much more to be documented through the eyes of science, and that every day can be a journey into the discovery of nature.

SURYANSHI ANAND
B.Sc. (H) Zoology
I Year

Conversation between a Researcher and Bacterium!

Ms. J was a research fellow in the Molecular Biology Laboratory at the University of Delhi. She was busy working on a bright Sunday morning when suddenly she heard a small whisper. She was startled by this sound, and looked around to see if someone had entered the lab. It was surprising for her as she was performing the Sunday duty alone. So, after seeing no one throughout, she got back to her work. The voice was heard again, and this time it was a bit louder than before. She was frightened now and suddenly noticed something on her benchtop. Perplexed and petrified, she stooped lower over the table and looked closely at a bacterial culture plate before her.

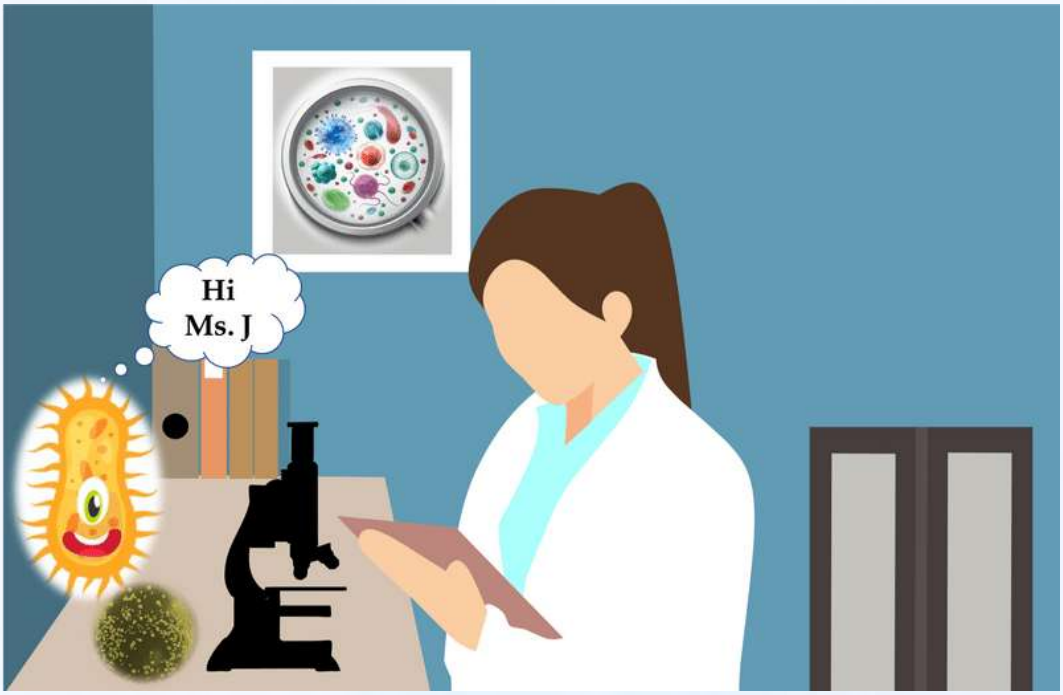


Image sources:
https://pxhere.com/en/photo/1457639 and https://www.vectorstock.com/royalty-free-vectors/bacteria-vectors

Bacterium: Hi, Ms. J!
Ms. J: Hi...iii.. *(in a terrified and broken voice)*
Bacterium: What on earth are you doing today? Did you forget that it's Sunday?
Ms. J remained silent. Her eyes were wide open, still trying to absorb what was happening.
Bacterium: Are you even listening to me? Didn't I ask you something? Why did you come to the lab today? Isn't today your day off?
Ms. J: Umm... Yes, yes, I am listening *(she responded while nodding her head and trying to appear normal)*. No, it is my duty today and I have to complete my experiment, so I am here.
Bacterium: Alright! So, what will you be doing today?
Ms. J: Oh, well, I have to isolate genomic DNA from the bacterium, for its taxonomic characterization, and... that's from you... actually *(she responded in a bit of a relaxed tone this time)*.
Bacterium: Oh... I didn't get that. What does it mean?
Ms. J: See, taxonomic characterization means that I will be conducting some experiments to find out who you truly are... I will find out your real identity, and your family, and finally, give you your scientific name that will be unique and universal.

Bacterium: Okay? *(in a puzzled tone)* I didn't really understand that, but it sounds great! My best wishes to you, Ms. J. Now that I recall, you also extracted DNA from me the last Friday, what happened then? Didn't that go well?
Ms. J: Well, yes, I did but I had done a mini prep then. Today, I want to do maxi prep so that I get a sufficient amount of DNA for all the experiments I have planned to do *(she had become quite relaxed by this time)*.
Bacterium: Ok, got it. But, I think you also need to re-streak me, as I am getting old and soon enough fungus might grow on this plate.
Ms. J: Oh yes, you are right! I have already prepared your meals, nicely poured and packed, just need to get them autoclaved *(she sat on the wooden stool now and was having a nice time conversing with the bacterium)*.
Bacterium: Wow, did you add glucose this time in my meals?
Ms. J: Well, I don't think you need glucose in the Luria-Bertini broth for growing; you grow perfectly well without that too.
Bacterium: Yes, that is true though. Well, Ms. J, tell me one thing?
Ms. J: What's that? *(she asked with her hand on her chin and elbow on the table) Bacterium*: How did I come here? I mean, in this lab? Actually, I kind of miss my friends.
Ms. J: Oh, let me tell you. Originally, you were isolated from HCH-contaminated soil in Lucknow, U.P. But, don't worry, I will take good care of you here.
Bacterium: What are you planning to do with me? I mean, what kind of experiments?
Ms. J: Hmmm... Well, I will first construct a phylogenetic tree using the homologs of your 16S rDNA gene, followed by finding out your fatty acid profile, gram staining, biochemical characterization, etc.
Bacterium: Oh! That's a lot of stuff to do.
Ms. J: Yeah, I know, but it's fun! You tell me one thing now.
Bacterium: Yes, go ahead.
Ms. J: How's your life going? I mean, what do you do all day long?
Bacterium: Well, I do not have advanced compartments as your cells do, but I can manage all of my metabolic functions quite nicely. Honestly, I am very busy making new proteins, fighting off pathogens, and protecting myself. And that's too much for a tiny being like me.
Ms. J: Yes, I have studied about that in my molecular biology classes. But never in my wildest dreams did I imagine that one day I would get first-hand information from a bacterium itself *(she said while bursting into laughter)*.
Bacterium: Haha! That's rational indeed. Anyway, I gotta go now. I need to repair a few genes.
Ms. J: Oh! Okay, yeah! I also need to get back to my work and finish DNA isolation today. Well, it was nice talking to you, Mr. Bacterium. Soon, you will have your own scientific name. I promise that!
Bacterium: Thanks, Ms. J! See you soon!
Ms. J: What was that? *(she asked herself while smiling)* Was I really talking to the Bacterium?
She shrugged and got back to her work.

DR. JASPREET KAUR
Assistant Professor
Zoology Department

Vision: Window to the Iridescent World

The planet EARTH has peculiar organisms who have astonishing powers like locomotion, nutrition intake, reproduction, sensitivity, respiration, growth, etc. However, vision, the ability to see, is one of the amazing potentials an organism has. Without this trait, the organism can't do other essential activities.
Vision has an evolutionary upper hand, it has evolved in its journey a lot in many ways. The estimation says that vision evolved around 550 MYA (Million Years Ago) on the basis of the earliest known fossil with eyes- Spriggina, a bilaterian, which is 550 million years old. The 'Cambrian explosion', occurred in the Lower Cambrian, and it was a period of seemingly fast evolution. According to this theory, the development of sophisticated eyes triggered an arms race that has hastened evolution.

Image source: https://imgur.com/gallery/S8e0jkh

Let's explore the Atlas of Vision with the help of an article published in the year 1994 by Zoologists Dan-E Nilsson and Sussanne Pelger. The stages of an event involving the evolution of a light-sensitive patch of photoreceptors to a camera-type eye were proposed. They hypothesized that animals with higher-resolution eyes always fared better in terms of survival and reproduction. They calculated how many stages or mutations it would take for a light-sensitive patch to grow into a camera-type eye. The flat patch of light-sensitive cells first becomes a depression, then a cup, and eventually a pin-hole shape.

To keep garbage out, the eye area eventually evolves to be encased in a membrane and filled with fluid, and in more complicated systems, to take advantage of how fluids bend light to concentrate it more sharply on the retina. Following that, the lens emerges as a new structure that aids in focusing light on the photoreceptive patch. The iris and pupil are then added to fine-tune the amount of light entering the eye. They discovered that all of today's sophisticated eyes could take 364,000 years or fewer to evolve.
In this world, we can see diverse animals having different types of eyes. Unicellular protists like Euglena have eyespots that help to sense the direction and intensity of light. Camera-type eyes of humans provide high-resolution vision by forming images on the retina. Jumping spiders have evolved telescope eyes which manifold the resolution. Cat eyes have tapetum lucidum which maximizes light sensitivity in a dark environment. Some animals have the ability to see beyond the visible spectrum that human eyes can't reach. Mantis shrimp (stomatopods) have compound eyes, which have 12 or more cones helping the crustacean to see all types of light spectrum. From all these instances, it can be inferred that animal eyes have been developed to see in a way that is tailored to their lifestyle and surroundings.

In response to the surroundings, evolution can drive the vision to new heights.

KHUSHI PRAJAPATI
B.Sc. (H) Zoology
I Year

Wildlife during Pandemic: The Other Side of the Coin

Last spring, humans opened their windows to a symphony. Swallows burbled, doves cooed, and sparrows chirped, to nature lovers, this music was a source of joy during the challenges of the pandemic. On waking up to these chirpings and fresh air, with fewer people and cars on the street during the worldwide lockdown to curb coronavirus spread, we believed that it healed the environment. But it took a long time to realize that we humans have become used to the monotone of humdrum mornings. Mornings were meant to be like crowded streets and bustling marketplaces for most working people. We saw hordes of people trying to go with their daily schedules, taking little notice of their surroundings. But the mornings during lockdown had a different vibe. As the sun emerged from the mountains, the sky was covered with tangerine hues. The darkness immersed us into the west, where birds looked like impressions on tangerine skies. Trees across the streets came alive with chirping birds and squeaking squirrels.

Image credit: Kriti, B.Sc. Hons. Zoology, II Year

This silence of empty streets was broken when Hyderabad streets drew a leopard, leaving the residents surprised and in awe of his beauty. The coronavirus lockdowns globally gave a rare opportunity to the natural world to experience life with hardly any human around and such incidents were reported all over the world. A Sambar deer was seen wandering on Chandigarh's road while a herd of spotted deer was seen exploring the streets of Haridwar without the fear of being hit by moving vehicles. According to a news report, an increase in the number of flamboyance (group of flamingos) was also seen in Mumbai. Olive Ridley turtles made the pristine beaches coastline their hatching grounds, while critically endangered Ganges dolphins returned to the ghats of Kolkata. The wild animals were like on a summer vacation, allowing the city folks to glorify their appearances. The lockdown was a godsent gift to them and to the environment. With decreased levels of pollution in cities and the wild animals in the urban landscapes, the lockdown appeared to be a short period of relief for Mother Earth to tend to herself.

But was everything about the lockdown so good for wildlife? No, as poaching cases increased during the lockdown. Sure enough that poachers didn't take a break-even in a pandemic. It was very exhilarating to see wild animals exploring human spaces with the slowdown of human activity. It showed how fast animals were good at adapting to a changing environment. But these movements posed unseen threats to them, as they entered human-modified landscapes in search of resources. These movements of wildlife increased the odds of animal-human conflict and made things easier for poachers. As the poachers and the other opportunists used the lockdown for their greed and misdeeds and the conservation within the country faced a real threat. In the closed economic life of humans, the closure of one system impacted several others. The closure of any industry put people out of work and for their survival they were forced to do some unsavoury practices like hunting and illicit lopping of trees. While we have a tendency to admire the beauty of wild animals traversing urban landscapes, we have to be responsive to our footprint on the ecosystem. The first step towards a healthy relationship between the people and the planet stems from strengthening our protected area network so that wild animals find a safe home once the lockdown was over. The lockdown gave us, the city residents, a fortune to get a rare peek into the beauty of wildlife and it was a great opportunity for us to channel our admiration for these majestic creatures to strengthen conservation efforts. This pandemic should serve as a lesson for us to rethink how we treat nature, given our dependency on it. As a community, we need to rise and move towards a new nature-friendly future aided by the protection and restoration of all life forms on Earth.

ANSHU RANA
B.Sc. (H) Zoology
III Year

Strange animal facts you wouldn't have heard before!

Image source: Getty images

Ever heard of the proverb 'You are what you eat'? It fits appositely in case of Flamingos. Born grey, their diet of brine shrimp and blue green algae comprising a natural pink dye canthaxanthin, makes their feathers pink.

Image source: istockphoto

Unsure if Sunny Deol's hand was really 'Dhai kilo', but a Blue Whale's tongue alone can weigh approximately 'Dhai hazar kilo!' (2500 kgs).

MinION: The Pocket-size Sequencer

In the modern era of technology, there is a rapid advancement in the fields of genetics, biotechnology and microbiology that is trying to make things easier that were not feasible a few years back. No one ever imagined having a palm-sized personal genome sequencer that could sequence a genome anywhere, at any time. The MinION is a device that makes this possible.

Basically, MinION is a portable sequencer that allows real-time DNA and RNA sequencing. It uses nanopore technology; i.e., it analyses long DNA or RNA fragments by monitoring changes in an electrical current as nucleic acids are passed through a protein nanopore (a pore of nanometer size), followed by decoding the resulting signal to provide the specific DNA or RNA sequence.

The MinION is a robust, transportable, real-time sequencer that is affordable. It is more like a cellphone with a USB cord that can be connected to a computer and it requires a little bit of sample to complete genome sequencing in a few hours. It analyses a single molecule and was developed by a UK-based company called Oxford Nanopore Technologies. The MinION contains a consumable flow cell into which the sample is added. The flow cell contains a sensor that detects the characteristic nanopore signal as the molecule is analyzed. In each MinION flow cell, there are 512 nanopore channels available to be sequenced simultaneously. It is controlled by software called MinKNOW, which can also run on a laptop and allows real-time sequencing.

Image source: https://www.science-practice.com/blog/2015/05/22/minion/

MinION has various applications in the fields of metagenomics, microbiology, genetics, etc. It can also sequence whole genomes, be used for RNA and cDNA analysis and targeted sequencing, etc.

MinION has come to be like a cell phone. If it is successful, sequencing will be as simple as measuring blood glucose levels at home with a blood glucose meter.

NAIYA CHAUHAN
B.Sc. Life Science
II Year

The Wild World

With 1 billion planets in our Milky Way galaxy, our 'EARTH' stands out differently, and what makes it different is 'ALIVE'. WE ARE ALIVE! OUR PLANET IS LIVING! We have different biomes which together makes our WILD WORLD. Our wild world has no limits in terms of sizes, from a small humming bird to the largest blue whales, wildlife is present in abundance. Different biomes together make a stable, productive and living ecosystem. We, as humans, are a very small part of this ecosystem, but we assume ourselves to be the most superior ones.

Image credit:
Ritupriya Basu,
B.Sc. (H) Zoology, I Year

Image credit:
Kriti,
B.Sc. (H) Zoology, II Year

Image sources:
https://pixabay.com/photos/antelope-nature-flowers-meadow-425161/
https://pixabay.com/photos/rosmarus-odobenus-water-mammal-387243/

Forests are home to 80% of the world's animals and plant species. The forests being the most diversified ones, tell us about the diversity on our planet. It is home to the African Weaver ant, the Amazon caterpillar, and lots of reptiles. Various animals which act either as prey or predator to one or the other animal make food chains and food webs. Forests are at the heart of the ecosystem. Animals like the royal Bengal tiger and Asiatic lion are indigenous to Sundarbans and Gir forests, respectively, in India. The western ghats are a biodiversity hotspot. Similar to forests, we have grasslands that cover a large area and are home to well-known species of the cat family. The Grassland is a classic example of how to understand the concept of the flow of energy in an ecosystem. Even though there are not very large amounts of water, wildlife is still able to make its presence felt. Animals like lions, tigers, and panthers show the wildest side of the wild world. One of the largest grasslands in the world is the Eurasian Steppe. It stretches from Hungary to China- almost one-fifth of the way around the world- and has animals like saiga antelope and vultures.

As we all know, the first life form emerged from water and hence the wild world is totally incomplete if we don't talk about the aquatic world. From the sea cow to the world's largest animal, the blue whale marine ecosystem is unbelievably huge, large seas

and oceans make the underwater life mesmerising. Three-fourth part of the earth is covered by oceans. When land life meets sea life, it gives birth to new life forms called coral reefs. We are able to see animals such as sponges, oysters, clams, crabs, sea stars, sea urchins sitting calmly on the coastal plains. Connecting all life forms is the freshwater ecosystem. They include lakes, ponds, rivers, and streams which show the flow of life forms. Animals like fishes, dolphins, mammals, and turtles are known for the phenomenon of 'migration' for breeding or better survival conditions. Although freshwater present in the world is only 2.5%, but it inhabits 41% of the world's fish population. Fishes are accompanied by turtles, frogs, marsh birds, mollusks and alligators in the freshwater ecosystem.

We have talked about parts of the wild world that have favorable weather conditions with a high population of many species, but what about the parts of the wild world with harsh climatic conditions, less water availability and difficult survival environments? How does life exist there? Deserts (hot deserts) with only 10% of the rain that a rainforest gets, are still a happy place for camels, snakes, and lizards. Temperatures in deserts sometimes touch +50°C with very little precipitation and rainfall. It has led to various physiological and morphological changes in animals living in the desert. If we move upwards, we will reach the poles (cold desert). In cold deserts, the soil is replaced by ice. The average lowest temperatures can be well below 0°C. The animals commonly found in cold deserts include polar bears, walruses, arctic foxes, arctic hares, and snowy owls. Hibernation, a wonderful survival tactic, is seen in polar bears.

All these life forms together make up a SPECTACULAR WORLD OF ANIMALS. But even after knowing all this, the human sees itself not with the wild world but against the wild world. Well quoted: 'In the wild world, there is no such desperate creature as a human being on the verge of losing love!' We should rather share our planet 'earth' wisely with the wild world.

SAMRITI THAKUR
B.Sc. Life Science
III Year

Strange animal facts you wouldn't have heard before!

Image source-
https://upload.wikimedia.org/wikipedia/commons/thumb/e/e2/Dorylus_helvolus%2C_l%2C_Seringveld.jpg/220px-Dorylus_helvolus%2C_l%2C_Seringveld.jpg

How big can ants get?
The queen driver ant is the largest living ant at 5.2 cm in length.

How many years do giant tortoises live?
Giant tortoises live around 100 years old, but the oldest is thought to have been 255 years old when he died.

Image source-
https://upload.wikimedia.org/wikipedia/commons/a/aa/A._gigantea_Aldabra_Giant_Tortoise.jpg

Brewing a Revolution

How billionaire entrepreneur Kiran Mazumdar-Shaw concocted her dominance over the Indian pharmaceutical market.

'I managed to do things with a lot of common sense, a lot of determination, and a lot of foolish courage'
-Mazumdar-Shaw in an interview with Science History Institute

Image source: https://www.google.com/amp/s/www.forbes.com/sites/ljkelly/2019/10/31/voices-of-success-billionaire-kiran-mazumdar-shaw-on-founding-biocon-as-an-accidental-entrepreneur/amp/

In a world focusing more and more on public health research every day, Biocon Ltd. stands as India's largest biotech and bio-pharmaceutical company under the guidance of executive chairperson Kiran Mazumdar-Shaw. A bright student and a lover of biology since her early days, Mazumdar completed her Bachelor of Science in Zoology from Bangalore University in 1973. She had watched her father, a brewmaster at United Breweries, at work ever since she was a little girl, and her interest in the field stayed even after years. Keen on pursuing further studies in fermentation science, she traveled far from home to Federation University, Australia to study the course of her choice. A female brewmaster, as the title suggests, was unheard of, especially in the 1980s. Hence, it was no surprise that she was the only girl in her class. Mazumdar was constantly challenged- being a woman in a STEM field in a foreign country at that time was already incredibly tough, not to mention the male-dominated field she had set her eyes on. Yet, she managed to emerge at the top of her class in a course that was deemed impossible for her.

India was not ready for a brew 'mistress'- Mazumdar was told as a trainee that the position of a brewmaster would not be offered to her despite her merit, as it was considered 'a man's work'. Thus, she looked for suitable opportunities elsewhere, finally being offered a position in Scotland. There, she met Leslie Auchincloss, the founder of Biocon Biochemicals Ltd. in Cork, looking to open an Indian subsidiary. After learning necessary skills like extraction for running a successful bio-firm, Mazumdar returned to India in 1978 to set up Biocon India Ltd. in the garage of the house she rented, with a seed capital of only Rs. 10,000. Given her youth and gender, she struggled to find funding and employees, and had to resort to hiring retired mechanics. Eventually, through constant searching, she landed investors to help acquire advanced equipment and infrastructure, soon turning the whole company around in the short span of 1 year. Biocon became the first Indian company to extract and export enzymes like papain and isinglass, which are heavily used in pharmaceuticals, to the US and Europe, and from a small garage, went on to find its home in a 20-acre property.

The company expanded into making more pharmaceutical ingredients, focusing on diseases like diabetes, cancer and immune disorders. Mazumdar later fully acquired Biocon, and established its subsidiary Syngene for R & D and manufacturing of drugs.

Mazumdar's vision has led to Biocon accomplishing many impressive feats. She noticed the market potential for statins as a treatment for cholesterol- and given its need due to an increase in lifestyle diseases, she was able to make Biocon grow from Rs. 70cr revenue in 1998 to Rs. 500cr in 2004, with statins contributing to around 50% of that amount. From having international collaborations with countries like Japan and Cuba, to being the first Indian biotech company to receive funding from the US for proprietary technologies, Biocon kept branching out in trailblazing areas of science like gene therapy and proudly boasts one of the biggest perfusion-based antibody production facilities in the world. Biocon is also Asia's largest clinical insulin producer, saving millions of people with diabetes globally.

Contributing to public service beyond the scope of bio-entrepreneurship, Mazumdar also strives to invest in infrastructure, health and education and has set up Biocon's own social foundation, The Biocon Foundation, to boost socio-economic progress in rural areas. An honoured board member across many reputable institutions like MIT and the Indian School of Business, she also served as Head of the Board at the Indian Institute of Management (IIM) Bangalore. In 2014, she was awarded the Othmer Gold Medal for her contributions to chemistry and science.

Kiran Mazumdar-Shaw's name frequents the world's greatest lists like Forbes, the Financial Times and TIME Magazine's '100 Most Influential People'. With a net worth of 3.8 billion USD, Biocon's founder is a self-made force of nature who continues to change lives for the better, inspiring business people and scientists alike. Having made a name for herself in an industry dominated by male names like Johnson & Johnson or Procter & Gamble, Mazumdar serves as a stellar icon for women in science, or rather, any one with dedication and ambition.

'Keep trying to find a differentiated model, don't just try to do what others are doing.... that's where innovation comes.'

Mazumdar always emphasises that entrepreneurship is about being able to face failure, manage failure and succeed after failure- and these words are applicable to all professions. Life throws many hurdles our way, and Kiran Mazumdar-Shaw's story shows us that no mountain is insurmountable, and that passion is vital for making a difference wherever we are. With quarterly revenue crossing a whopping Rs. 1945cr figure in the 2nd quarter of 2021, Biocon continues to skyrocket as a notable pioneer in scientific development. The company now has a reach in over 120 countries, having filed over 950 patents for its cutting-edge innovative research.

Since the advent of the COVID-19 pandemic, we can agree that quality healthcare is non-negotiable. This story stands as an example of the unconventional ways that people with a background in biology can contribute to societal well-being. Today, Biocon is a global giant brimming with success with several subsidiaries like Biocon Biologics, all courtesy of a persevering woman who mastered a game she was told not to play, and refused to take no for an answer.

PRASHANSA
B.Sc. (H) Zoology
II Year

The Epigenetics Revolution: A Book Review

Genetics has made enormous progress since the turn of the century. The Human Genome Project has completed the sequencing of human DNA and it seemed only a matter of time before we had all the answers to the mysteries of our existence. The cutting-edge of biology, on the other hand, tells us that we still don't know the answers to all the questions. How come, despite the fact that every cell in our body contains the same DNA, we don't seem to grow hair out of our eyeballs or eyelashes in our lungs? How can identical twins have the same DNA but have such dramatic differences in their lives and development?

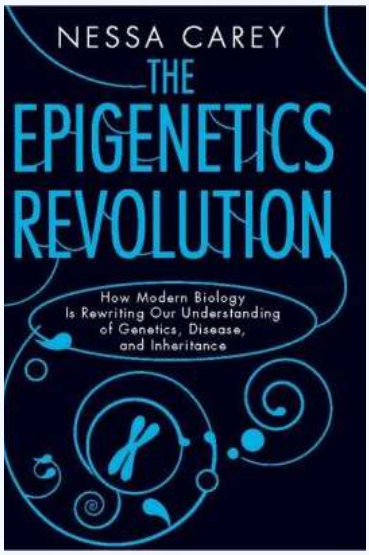


Image source: Barnes and Noble

Cells, it turns out, read the genetic code in DNA more like a script to be interpreted than a mold that replicates the same result every time. This is epigenetics, the most rapidly evolving field of biology today. *The Epigenetics Revolution* follows the exciting journey this discipline has taken over the last two decades. Nessa Carey, explains how queen bees and ants control their colonies, why tortoiseshell cats are always female, why we age, develop disease, and become addicted to drugs, and much more. Most excitingly, Carey reveals the incredible possibilities for humanity that epigenetics offers in a surprisingly short time frame. All of these processes cause minor changes to genes, causing them to behave differently from that point. In a nutshell, epigenetics is the intersection of nature and nurture. The reason for the excitement is that this old and often sterile dichotomy is now being fleshed out with real knowledge of how genes are controlled and how they respond to life situations.

Carey focuses on cell and molecular biology, with topics such as stem cells, ageing, psychiatric disorders, and cancer. Her clear prose explains how a period of malnutrition during pregnancy can have measurable effects on the health of future generations. We see that the genome inherited from the mother is not identical to the genome inherited from the father, and that while these two genomes work brilliantly together to create new life, they are still locked in an evolutionary battle of the sexes.

The book especially piqued my interest because it made me think about genetics in a completely different way, as something changeable and constantly evolving, as opposed to the rigid structure I had previously imagined. One of the most intriguing parts of the book for me was the explanation of how your upbringing, as well as your genetics, influences your mental health.

There is a commendable depth of explanation and a wealth of scientific terminology to be found here, making it more than your average popular science book. While the latter may be off-putting to some, Carey's mastery of metaphor ensures clarity throughout. This was particularly fascinating because it demonstrated how epigenetics, which appears to be a very specialised subject, is relevant to people in their daily lives.

SHREYA RAWAT
B.Sc. Life Science
III Year

IRIDESCENCE 2021-22

ARTSCAPES

RITUPRIYA BASU
B.Sc. Life Science
I Year

AKANKSHA CHAUDHARY
B.Sc. (H) Zoology
I Year

SAKSHI KUMARI
B.Sc. (H) Zoology
I Year

GARIMA VERMA
B.Sc. (H) Zoology
III Year

VAISHNAVI RAJAGOPALAN
B.Sc. (H) Zoology, I Year

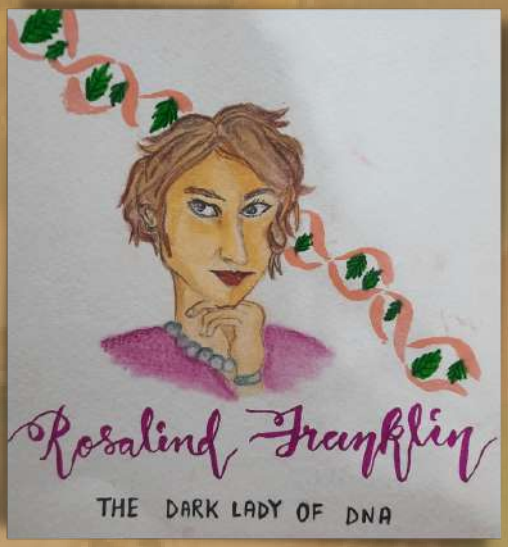
SWETA RAJAK
B.Sc. (H) Zoology
I Year

SHREYA SINGH
B.Sc. Life Science
II Year

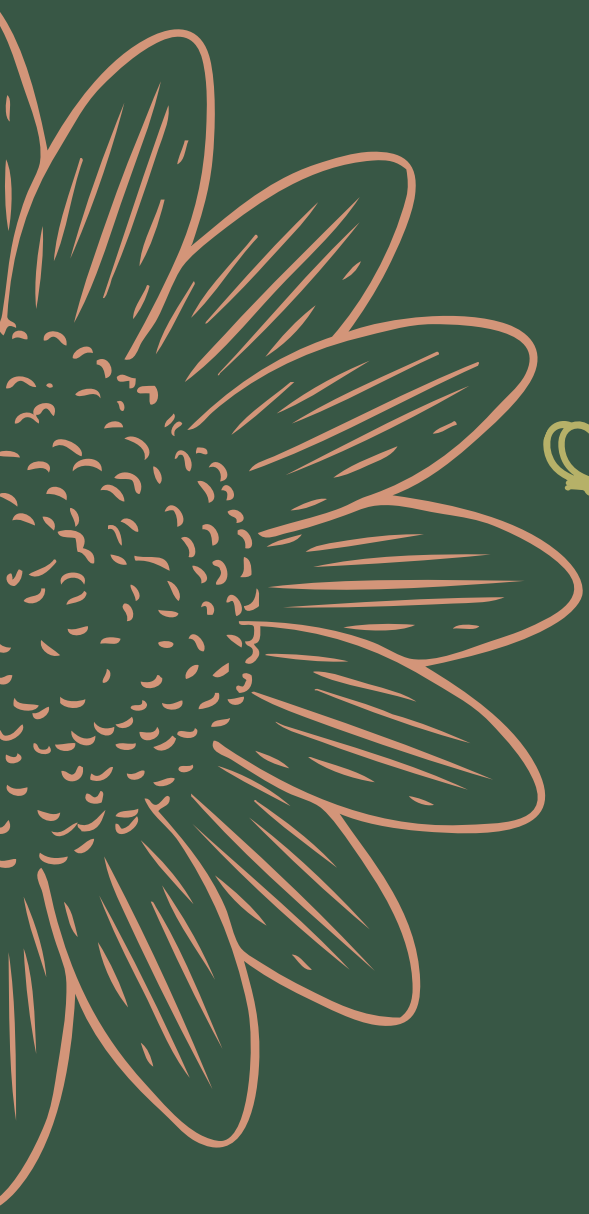
DRUSHTI SABLE
B.Sc. (H) Zoology
Batch 2018-21

SONIYA BAGHEL
B.Sc. (H) Zoology
I Year

SWATI KOTHARI
B.Sc. (H) Zoology
I Year



SWIKRITI ASTHANA
B.Sc. (H) Zoology
I Year



IRIDESCENCE 2021-22

TRAVELOLOGY

THE UNFORGETTABLE TRAIN JOURNEY TO MOUNTAIN SCHAFBERG

The window of my room at the Institute for Limnology, Mondsee opened to a mesmerizing view of mountain Schafberg which is situated at the shore of Wolfgangsee lake. The mountain would either be covered with sunshine or a sheet of snow or curtain of clouds. I could not only see it but also feel it from a distance so far off. Be it dusk or dawn I would feel like embracing it. To my surprise, my colleagues there told me that I can visit the mountain during the summer, when the Schafbergbahn, starts operating. It was astonishing for me that a train could take me to the mountain peak which I had been day-dreaming to touch. I decided to travel with a German friend to avoid any confusions due to language barrier. It was her first visit too, so we both were very excited.

The trip to Schafberg began with a bus from the institute followed by a ship route through lake Wolfgangsee to St. Wolfgang. We missed one train by a few minutes and had to wait for about 40 minutes at St. Wolfgang. It was a good opportunity to visit the peaceful pleasing surroundings and enjoy the steaming coffee before boarding the train. As soon as the train stopped, we ran to grab the window seats. My heartbeat accelerated after sitting in the classic, old world cog-railway which was ready to take me up to the Schafberg Mountain.

Image credit: Prof. Renu Gupta


Image credit: Prof. Renu Gupta

The track is known to be the steepest, steam railway operating from St. Wolfgang since 1893. The train route took about 35 minutes, covered a distance of about 5.8 Km and an ascent of 1,190 metres. The journey to Schafberg Mountain was an epic unforgettable experience with a few stations in between (Dorneralpe, Schafbergalpe, Schafbergspitze). During the journey, we would dread about the train de-railing or slipping backwards. This fear turned to laughter as a memory.

The greenery and the sneaking sun played hide and seek through that half hour travel. The train was slow and steady allowing us the glimpses of lakes and mountain ranges. The views of glittering lakes Wolfgangsee, Irrsee, Fuschlsee, Chiemsee, the foothills of the Alps and the majestic mountains Höllengebirge range, Dachstein and Watzmann were all out of the world experience. I finally met the Mount Schafberg, thanks to the Schafbergbahn! A memory I will always cherish, a feeling I can still feel, an experience which will stay in my heart forever, a trip I would love to take again!

Auf Wiedersehen!

DR. RENU GUPTA
Professor
Zoology Department

AN EXHILARATING EXPERIENCE AT UMNGOT RIVER

A mind preoccupied with the worries and pain of your loved ones, still, you want to experience the beauty of nature and have some me-time. It was hard to take that step and I was determined to visit Meghalaya and explore the terrace of India. Early morning in Shillong was a little pleasant shock to my biological clock. As it was so bright at 5:30 AM in the morning, the sun was at its full charm. It was planned to visit the Umngot river, with very low expectations as pictures are always edited by various tools and posted on social media. With friends, it was a beautiful three-to-four hour long drive from Shillong passing through upper Shillong, green hills, and betel (supari) farms. Located in the small border town Dwaki of state Meghalaya, the Umngot river is the cleanest river of India. The river serves as a spot for eco-tourism and trade hub between India and Bangladesh. One can experience the boundaries fading as there is no fencing to separate the countries and by crossing a suspension bridge you are in Bangladesh. After acquainting how a stone can serve as a boundary between two countries and two-three BSF Jawans were enough to control the migration into another country, a boat ride was taken to the river.

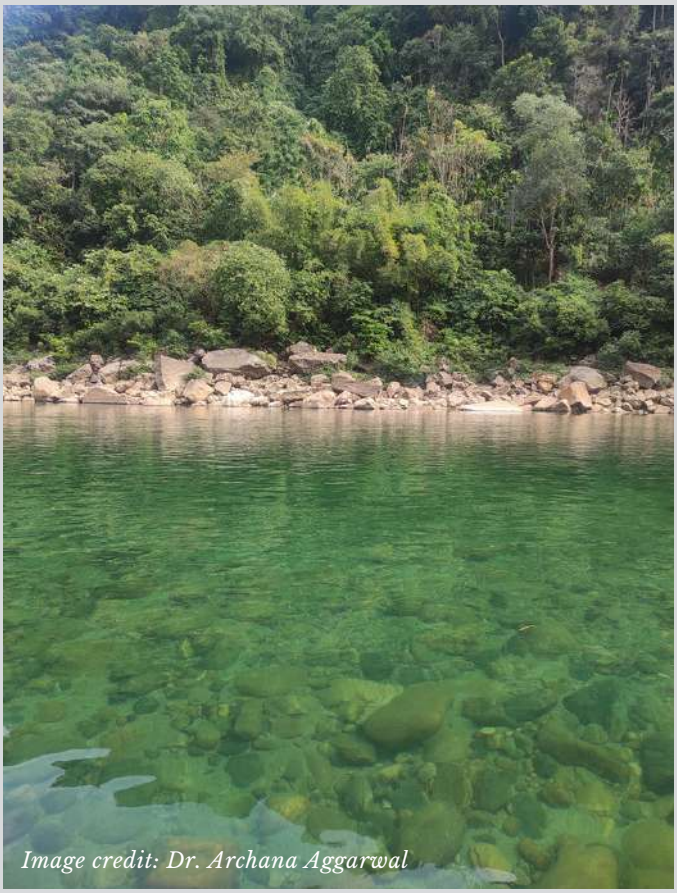


Image credit: Dr. Archana Aggarwal

It was mesmerizing to see the crystal-clear water and transparency to the depth. It was a breathtaking view of the pelagic fishes darting in between pebbles and stones in the lush blue-green freshwater. The river serves as an angling site (fishing method) for the local Khasi tribe and tourists as well. It was inspiring to see that there was no plastic pollution and trash around the river. It was just clean and clear water surrounded by lush green vegetation. A boat ride through such calm and beautiful water is pristine and you forget all your worries.

It is rightly said to be a heaven on earth!

DR. ARCHANA AGGARWAL
Assistant Professor
Zoology Department

IRIDESCENCE 2021-22

PIXELS AND AESTHETICS

ANSHU RANA B.SC. (H) ZOOLOGY III YEAR

DEEPIKA WADHWA B.SC. (H) ZOOLOGY II YEAR

JYOTI JHA
B.SC. (H) ZOOLOGY
II YEAR

LAVANYA RANJAN
B.SC. (H) ZOOLOGY
BATCH 2018-2021

JYOTI JHA
B.SC. (H) ZOOLOGY
II YEAR

KRITI
B.SC. (H) ZOOLOGY
II YEAR

AHANA SAHA
B.SC. (H) ZOOLOGY
I YEAR

KRITI
B.SC. (H) ZOOLOGY
II YEAR

ADITI KUMARI
B.SC. LIFE SCIENCE
III YEAR

ARYA SINGH
B.SC. (H) ZOOLOGY
I YEAR

RAISANA KHATOON
B.SC. LIFE SCIENCE
II YEAR

SHRUTI RANI
B.SC. LIFE SCIENCE
II YEAR

IRIDESCENCE 2021-22

POETIC MUSINGS

BOOKS

The cover that can touch,
The throbbing throb underneath.
The title that could sway,
Takes to an indifferent island.

The leaves that are laced,
The wisdom that stays.
The embellished phrases,
That leaves indelible traces.
The words that could peep,
Inside the heart, it weeps.
All of it seeps,
In the library of the throb,
it finds peace.

Sometimes a compatriot,
Sometimes kin.
Innumerable times a partner,
Wiping the tears.
The teacher who made us realise,
How to conquer the fears.
The frivolous remarks that popped the smile,
The motivational jerk that made us crawl the miles.
The friend who holds the hand in the path unknown,
It knits an indifferent abode,
It enthrals with facts and ingenuity.

The chum taking us to the land of cognizance,
From the land of negligence.
From the land of vainglorious,
To the island of virtues.
From the darkness to the beacon of light.
From the wrong deeds to the absolutely right.

It taught us to love immensely,
It preached the doctrines.
It indoctrinates the morales.
The human that all of us, aspire to be.
It mentored the path of different perspectives,
From following the flocks,
To think differently.
From knowing the right,
And propagating it with might.
Not following the norms just for the sake,
To have a different sight and take.
It empowers us to nourish the soul,
And nurture the minds.

We move on the embellished lines,
That takes us to the fantasized lanes,
That built the castles of fond hope in the heart.
The estuary of the reel and the real.
The smudging lines of the unreal,
All of it plays the gimmicks of chimaera,
Among the denunciations and chastises,
It endears the heart, consoles and pacifies.

The world that doesn't exist,
Offers the fond hope that relishes.
The faith that re-binds the broken ties.
The belief that knows no bound,
The unreal simulates the immense obduracy,
It glorifies the latent glory.

The package of motivation it carries,
Offers the direction to,
The belief reft soul,
To the bemused stuck in the maze.

The envelope of love that it carries,
The heart that usually gets moulded,
The benevolence, empathy it nurtures,
It pushes the fond hope that often lumbers.
The pages that have the ride of the smell,
The chest that pounds with pride and swells.
All of it takes us to the way,
The unhopeful to the ray.

The books that often lie at the corner,
Collecting pulverulence.
The world unknown of the worth it encompasses,
The ingenuity that never gets imprinted and surpasses.
The worthy friend has called in,
To look out the other way.
It calls out to embellish our lives,
With worth and virtues,
With ingenuity and benevolence,
With charm and love.
With the motivation to strive,
And in the heartbreaks to thrive.
The friend that hops in our hearts gently,
Adorns us within with its charisma and glory.

TRISHA TIWARI
B.Sc. Life Science
Batch 2018-21

Image credit:
Kriti, B.Sc. (H) Zoology, II Year

THE TIGER'S CRY

[Baby cub to his father:]
Daddy!!Daddy!!
I'm out in this world,
Let me happily twirl.
Take me to the pretty forest,
I wanna meet the tourists.

[Tiger to his baby cub:]
No, No, No!! My dear child,
You cannot rome in the forest wild.
The humans are our greatest foe,
They will take us to the circus show.

[Baby cub to his father:]
Daddy!! Daddy!!
I cannot spend my time in this cave,
I'm born to enjoy the life that God gave.
I want to hop around the bushy grass,
And meet other creatures that pass.

[Tiger to his baby cub:]
Listen, my dear Kiddoo!!
We are not lucky to get this chance,
Even my friends want to dance.
But the selfish men poach us,
To satisfy their needs, they approach us.
They turn our skins into rugs,
And use our bones to make drugs.
Our claws are casted into jewellery,
And our heads for sculptory.

[Tiger to the men:]
Our life is in danger,
We are getting ENDANGERED.
Save us– O men, Thou!!
Make 'SAVE TIGERS' as a vow.
Teach children at coaching,
'SAY NO TO POACHING'.

Image credit:
Kriti, B.Sc. (H) Zoology, II Year

KRITI
B.Sc. (H) Zoology
II Year

WATER

Waking up with drooping eyes
Praying again to the skies
Nearby well has gone all dry
Day begins with a cry
Walking the path miles long
Carrying pot and her boy along
Scorching heat every mile
Looking her boy with faint smile
Priceless drops flowing down
Looking each one with a frown
Waiting for her turn, she sits down
Looking at the dry soil brown
Pot filled amidst shouts and cries
Wish she could cross the skies
Thanking God for quenching thirst
Shutting eyes to see the worst
Seven days but same drill
Carrying the pots to be filled
Life circling a pot of water
What solutions we can offer
Save this priceless liquid called water
For all your sons and daughters

DR. JASPREET KAUR
Assistant Professor
Zoology Department

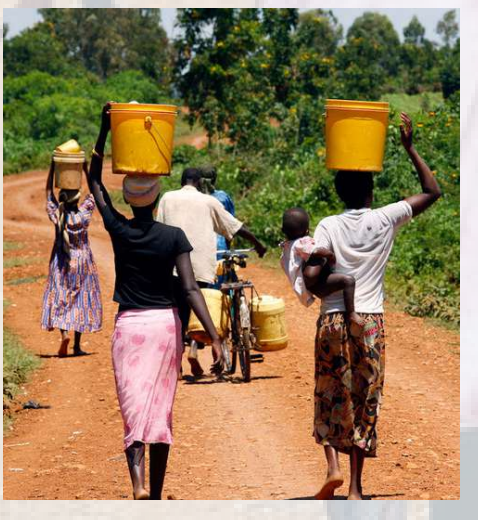


Image source:
https://ourworld.unu.edu/en/water-for-life-an-african-photo-exhibit

ZOOLOGY? OUT OF NOWHERE

Better options are there,
Why Zoology? Out of nowhere.

Pardon please,
Let me complete.

World's deadliest is whom?
Is it a shark or a tiger groom?
Take back your kudos,
It's mosquitos.

Are you sad about lockdown life?
Wanna live a mayfly like?

Some legends said,
One heart isn't enough
to be tough
That's why the
octopus have three.

What makes humans special?
Intelligent brain!
Monkey's have already gained.
Homophile love!
Common in albatross females.
Monogamous we,
makes us rare.

Isn't Zoology wow!
That's why I bow.

HARSHITA UPRETI
B.Sc. (H) Zoology
I Year

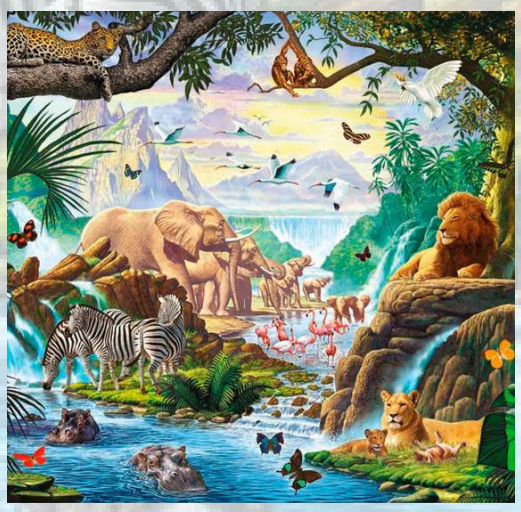


Image source:
https://wallpapersafari.com/w/ZnXkfo#google_vignette

PATH OF LIFE

We arrive...we cry...surroundings glitter
Noises...murmurs...talks and lots of laughter
We grow, we walk...we smile...we try
We fight, we cry...surroundings seem to fry

Life takes its pace...twists and turns
Losing comforts...heart pain and heartburns
Trapped in rat race...running pillar to post
Racing against time...roasting like a toast
We run, run and run...with a will to win...losing all the fun

Path of life...makes meet eyes
Silence speaks...time flies
Turning phases...adoring friends beside
Emotions build...love blooms...rest all aside
Holding hands...taking vows...walking together
Hearts ponder...new life in arms...so gentle so tender
We admire...we wait...we pray...we appreciate
They grow...they walk...they smile...they create
They flourish...we cherish...they fly in life-flight
It's their life...we hold emotions...don't hold tight

We grow older and older...cells need rest and fodder
Unable to cope...gone are all hopes
Lying on the bed...feeling the peace
Time has come...we have to leave
Surroundings cry...gone is the glitter
It's a cycle...nothing goes in vain
Will arrive again...will smile again
Path of life...surroundings will...
Glitter again...laugh again

DR. RENU GUPTA
Professor
Zoology Department

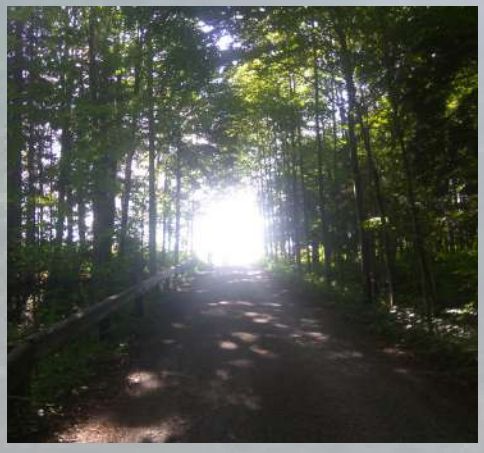


Image credit:
Prof. Renu Gupta

BLACK COAL

Bituminous, anthracite, lignite...
Which one am I from the above?
Rain perished the soil,
It's droplets extirpating the leaf's venules like fire.
The smell of ash in the air,
It's getting harder to breathe.
Although it's spring
I can feel the winter dominating each and every breath of mine.
Perseverance, tenacity, patience,

Vincit qui se vincit.
(He conquers who conquers himself)

It's now the beginning of the fall.
Walking the path with trepidation,
A blood red Dahlia matching the setting sun
caught my incredulous eyes.
Power & dignity was it?
Was it the end of my impediments?
Even if not!

Flectere si nequeo superos, Acheronta movebo.
(If I cannot bend the will of Heaven, I shall move Hell)

A black coal,
Formed from its selfish desire to survive
Survives millions of tenebrous nights.
The nights of grief & toil didn't go in vain.
Blazing through his eyes
Billions witnesses
Polished from the lowest quality coal
A black coal of the highest grade,
Most ethereal, called the
Anthracite is formed.

Veni, vidi, vici
(I came, I saw, I conquered- Caesar)

Image credit:
Aditi Kumari, B.Sc. Life Science, III Year

ISHITA KALSHYAN
B.Sc. (H) Zoology
Batch 2018-21

SILENCE

I remember I used to hold my pen and press it against
the lifeless paper so the ink could flow the life to shape
my imagination,
I remember to press the nib a little harder so the
impression could sink a little farther.
Because in the end,
those written pieces
are the impression of the wars fought by my
imaginations begging for physical meanings.
So, they fabricate reality,
The reality of twinkling stars as my beating heart,
The reality of refraction phenomena as the shade of my
dilemmas.
The wars between two countries or within a person are
meant to give you silence,
The silence of victory,
The silence of loss,
The silence of destruction,
I am in it;
In that silence...
I don't know who won but I know the voice that used to
repeat the stories is lost somewhere in quantum theories
And left me bare.

MEGHA LAKHERA
B.Sc. Life Science
Batch 2018-21

Image credit:
Anjali Rawat, B.Sc. Life Science, Batch 2018-21

MY LITTLE SQUIRREL

Large eyes overflowing with liveliness,
Yet your tiny limbs
never fail to make a mess.
Not to mention your naughtiness,
Complimented by your innocency.
With your Sciuridae family,
Residing in the fancy 'Kingdom' of Animalia.
Tiny bushy, fairly vocal creatures,
Inhabiting Tropicals, Wetlands, Urban.
My little omnivorous friend,
Breed in the bracing autumn.
Jumping like daredevils,
With bushy tails as parachutes.
My words are insufficient
for your beauty-so mesmerizing,
Your name *Funambulus palmarum*
itself has a special ring.

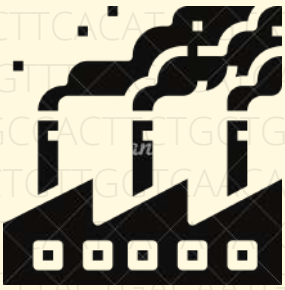
ISHANI
B.Sc. Life Science
I Year

Image credit:
Prashansa, B.Sc. (H) Zoology, II Year

IRIDESCENCE 2021-22

COMPILATIONS AND ILLUSTRATIONS

POSITIVE EFFECTS OF COVID-19



In more industrially developed countries a substantial reduction in air pollution has been observed.

Emissions of carbon dioxide reduced between 5 and 10%. The particulate matter level was found to reduce by 9–200% globally, and New Delhi, India, observed the highest levels of changes in PM levels.

Demands for conventional energy resources declined by almost 30% in most of the countries. Approximately 12–20% drop in electricity usage was recorded in most countries.

Owing to lockdown, levels of dissolved oxygen were found to be increased by 79%. Pollutants like industrial effluents and pollution due to tourism activities significantly dropped.

Apart from all the threats to life posed by COVID-19 it had several positive impacts too on the environment indicating a way towards better environmental management.

Reference: Mousazadeh, Milad, et al. 'Positive environmental effects of the coronavirus 2020 episode: a review. Environment, Development and Sustainability (2021): 1-23.

RITIKA KALRA
B.Sc. (H) Zoology
Batch 2018-21

Nesting Cycle of Tailorbird

Nest building, egg laying, incubation, pre- & post-feeding care, require nearly 40 days

Nest building- 10 days

Incubation period lasts 14 days (1); after eggs hatch (2, 3) in one or two days, feeding occurs for 8-9 days (4-7), fully developed chicks ready to leave the nest one by one (8, 9).

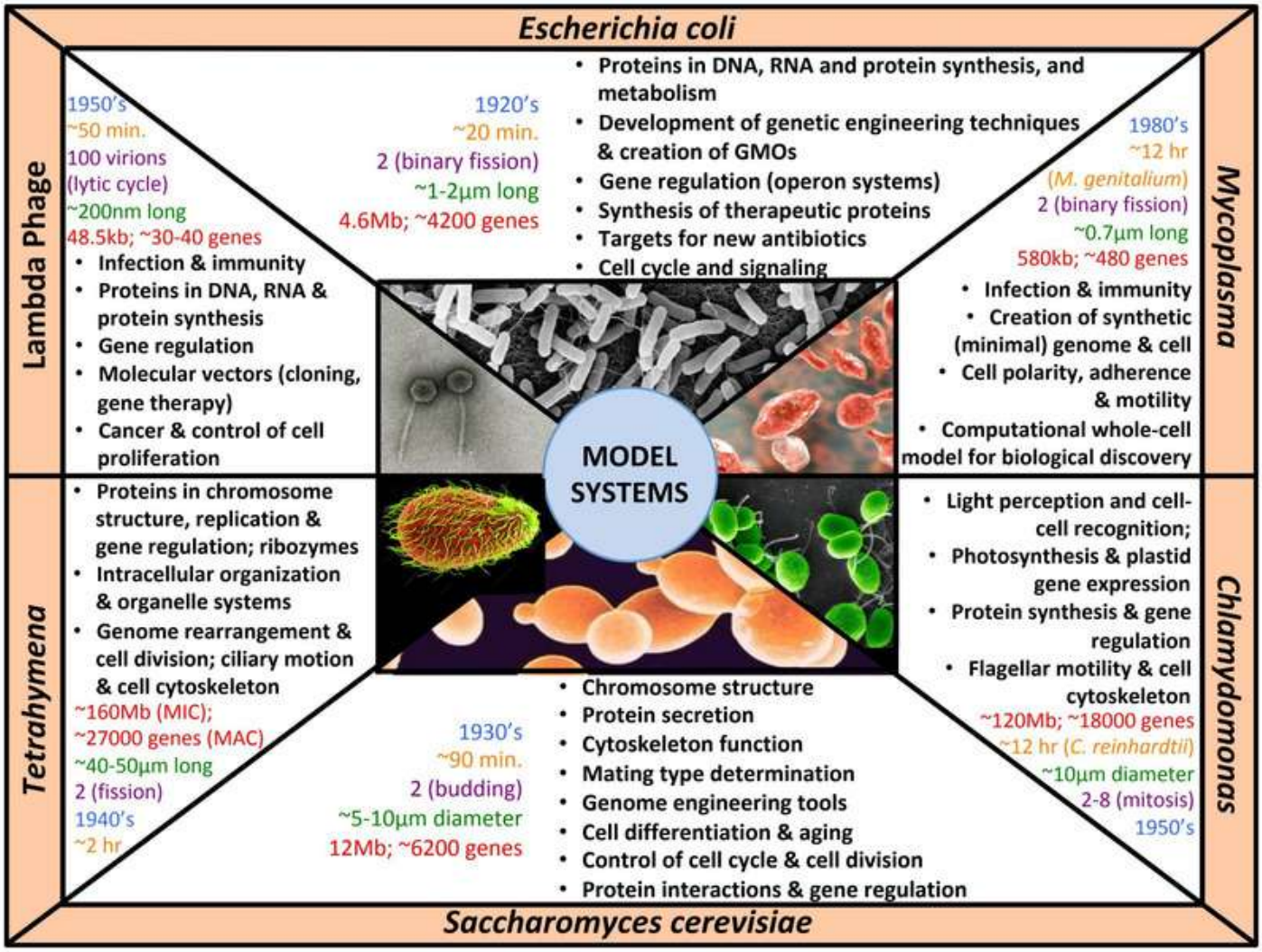
SANJU JAKHAR
B.Sc. (H) Zoology
Batch 2018-21

Model Systems in Biology

PART I

(THIS IS PART ONE OF A FOUR-PART SERIES, BRIEFLY INTRODUCING THE DIVERSITY OF MODEL ORGANISMS/SYSTEMS STUDIED IN BIOLOGY)

A model system is any organism/ system that has a short generation time, is easily available/ bred under laboratory conditions, has a well-characterized genome and/or has similarity to human beings, in order to study certain biological phenomena with the aim to provide insight into other organisms.



COLOR KEY:

- First studied in (year)
- Generation time
- Progeny
- Size
- Genome size; No. of genes
- Studied for/ Major contributions in

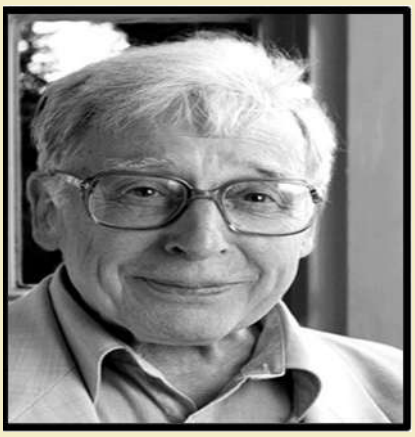
Compiled by:
DR. ANSHU ARORA ANAND
Assistant Professor
Zoology Department

(Look for part II in next issue.)

The Mavericks of Medical Research

It is important to keep asking questions and chase our curiosities. Every day in a lab is significant- you never know which one may lead to the next trailblazing breakthrough that changes life as we know it and helps us understand it better. The Nobel Prize in Medicine and Physiology is awarded to academicians who have significantly bettered the quality of human life with their research- here is a list of some of the most notable laureates and the work they did.

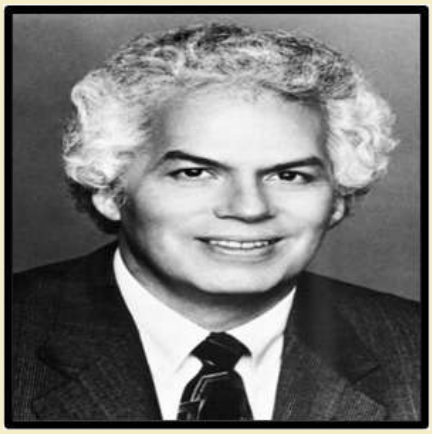
Robert G. Edwards, British Physiologist



Not everyone can have children naturally. Fallopian tubes may be blocked or there can be too few eggs or sperm cells. Robert Edwards found a way to make fertilization occur in-vitro. In 1978 the first child was successfully born as a result of in-vitro fertilization.

Stanley B. Prusiner, American Neurologist

In 1982 Stanley Prusiner succeeded in isolating a suspected infectious agent, a protein that came to be called as a prion. Prions fold differently than regular proteins and may be transmitted to normal proteins. This is the root of the problem with many brain diseases.



Susumu Tonegawa, Japanese Scientist

The immune system relies on antibodies for protection as they neutralize substances foreign to the body. Susumu Tonegawa demonstrated this in 1976 by redistributing genes in a cell during its growth into an antibody-producing B lymphocyte.

Earl W. Sutherland Jr, American Pharmacologist & Biochemist

Scientists have discovered that cyclic AMP is a second messenger system with important roles in a variety of biological processes. Earl Sutherland studied how signals from one cell to another are conveyed by a messenger- the hormone, and how signals within the cell are then conveyed by another messenger.

Georg von Békésy, Hungarian Biophysicist

The inner ear is the part of the human body that allows us to hear. Sound waves from the outside world are converted in the ear into vibrations in membranes and bones. These vibrations are then converted into electrical impulses, which are transmitted to the brain and result in auditory impressions. Georg von Békésy clarified the processes that occur in the cochlea of the inner ear.

References:

All Nobel Prizes in Physiology or Medicine. (2021). The Nobel Prize.
https://www.nobelprize.org/prizes/lists/all-nobel-laureates-in-physiology-or-medicine/

Compiled by:
DEEPIKA WADHWA, B.Sc. (H) Zoology, II Year
SURAYANSHI ANAND, B.Sc. (H) Zoology, I Year

UNEARTHED

Land or water, large or small- our earth has fascinating critters tucked away in its crevices. Exploring the living world is a never-ending treasure hunt- say hello to these new species which have been discovered recently!

Brookesia nana

Img_source: https://www.nationalgeographic.com/animals/article/tiny-chameleon-smallest-reptile-discovered-madagascar

- CHAMELEON ~ NANO-CHAMELEON
- DISCOVERED IN: MADAGASCAR
- DISCOVERED BY: FRANK GLOW

Eurythenes atacamensis

Img_source: https://theconversation.com/how-we-discovered-a-giant-new-crustacean-scavenging-on-the-deepest-depths-of-the-ocean-floor-161214

- AN AMPHIPOD
- A TYPE OF CRUSTACEAN CLOSELY RELATED TO A SHRIMP
- ENDEMIC TO PERU-CHILE TRENCH
- DISCOVERED BY: JOHANNA WESTON

Octopus djinda

Img_source: https://www.newscientist.com/article/2296321-newly-recognised-octopus-species-described-in-south-west-australia/

- STAR OCTOPUS
- DISCOVERED IN: AUSTRALIA
- DISCOVERED BY: DR. MICHAEL AMOR

Tabwecala robinsoni

Img_source: https://twitter.com/notalepido/status/1476585620558561282?lang=bn

- MOTH
- DISCOVERED IN: VANUATU ISLANDS (ESPIRITU SANTO, WEST PACIFIC OCEAN)
- DISCOVERED BY: ALBERTO ZILLI

Acutogordius olivetti

Img_source: https://www.rosspiper.net/2021/11/08/new-horsehair-worm-from-peru/

- HORSEHAIR WORM
- DISCOVERED IN: PERU
- DISCOVERED BY: ‘‘CITIZEN SCIENCE’ EXPEDITION RUN BY THE CRESS FOUNDATION

Ceratosuchops inferodios

Img_source: http://novataxa.blogspot.com/2021/09/ceratosuchops.html

- SPINOSAURUS
- COMMON NAME: HELL HERON
- DISCOVERED IN: THE ISLE OF WIGHT, ENGLAND
- DISCOVERED BY: BRAIN FOSTER & JEREMY LOCKWOOD

Eumillipes persephone

Img_source: https://www.theguardian.com/world/2021/dec/16/the-first-true-millipede-new-species-with-more-than-1000-legs-discovered-in-western-australia
fbclid=IwAR0ZFVGmQjNUh2YsxheVKOqplapgJJMAYToQjZBXmmi5wI66TiuWb3m9D1o

- MILLIPEDE
- DISCOVERED IN: AUSTRALIA
- DISCOVERED BY: DR. PAUL MAREK

Opaluma rupaul

Img_source: https://www.npr.org/2021/09/15/1037402015/rupaul-name-new-fly-australia

- RAINBOW FLY
- DISCOVERED IN: QUEENSLAND, AUSTRALIA
- DISCOVERED BY: BRYAN D. LESSARD & NORMAL E. WOODLEY

Myotis nimbaensis

Img_source: https://www.batcon.org/meet-myotis-nimbaensis/

- ORANGE-FURRED BAT OR NIMA MOUNTAIN BAT
- DISCOVERED IN: NIMA MOUNTAINS IN GUINEA, WEST AFRICA
- DISCOVERED BY: NANCY SIMMONS

Strumigenys ayersthey

Img_source: https://news.mongabay.com/2021/07/naming-of-new-ant-species-from-ecuador-breaks-with-binary-gender-conventions/

- ANT
- DISCOVERED IN: CHOCÓ REGION OF ECUADOR
- DISCOVERED BY: DOUGLAS B. BOOHER & PHILIPP O. HOENLE

COMPILED BY:
KHUSHI PRAJAPATI &
ARYA SINGH
B.SC. (H) ZOOLOGY, I YEAR

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1. Shersby, M. (2021, December 8). 24 of the new species discovered in 2021. Discover Wildlife. Retrieved January 25, 2022, from https://www.discoverwildlife.com/news/new-species-in-2021/&usg=AOvVaw0txInr5OsRewcq5OOn0eTr
2. Museum scientists described 552 new species in 2021. (2021, December 30). Natural History Museum. Retrieved January 25, 2022, from https://www.nhm.ac.uk/discover/news/2021/december/natural-history-museum-scientists-describe-552-new-species-in-2021.html
3. Ceratosuchops. (n.d.). Ceratosuchops. Retrieved June 14, 2022, from https://en.m.wikipedia.org/wiki/Ceratosuchops

The X(X) Factor

Stereotypes, stigma and ceaseless struggles- history is a witness that being a woman in academia is an inspiring revolution in itself. Armed with razor-sharp vision and an endless drive for more, these Indian women have steered the course of scientific progress to higher seas. They do not wait for magic glass slippers- they go and shatter glass ceilings.

Kamala Sohonie

First Indian woman to earn a Ph.D. in a scientific discipline. Found the enzyme 'cytochrome C' in plant tissues, & that cytochrome is involved in oxidation in all plant cells. Fought against gender bias at IISc Bangalore, when CV Raman denied her entry merely because she was a woman.

Founder of CGSI

a great writer, the picture of persistence.

Tessy Thomas

Tessy Thomas is known as the Missile Woman of India. She was the first woman to lead missile teams in India. She served as Project Director for the Agni IV and V missiles. Was awarded with Lal Bahadur Shastri National Award for her contribution in making India self-reliant in the field of missile technology.

Missile Woman of India

Wings of will, the epitome of inspiration

Janki Ammal

The inspiring light in darkness, the root beneath the trees

Janaki Ammal Edavalath Kakkat was an Anglo-Indian botanist. Her notable works include plant breeding, cytogenetics and phytogeography.

Janaki performed chromosomal studies on a wide range of garden plants. She was awarded the Padma Shri in 1977.

Asima Chatterjee

The leading lady
Aiding humankind beyond labs

Asima Chatterjee was a notable Indian organic chemist. She was the first lady to receive a Doctorate of Science from an Indian university. Google depicted a 24-hour Google Doodle to honour her on her 100th birth anniversary in September 2017. Her work includes research on vinca alkaloids, anti-epileptic drugs and development of antimalarial drugs.

Kamal Randive

The resilient cure chaser

Kamal Jayasing Ranadive was an Indian biomedical researcher. Founded India's first tissue culture research laboratory at the Indian Cancer Research Centre in Mumbai. Awarded the Padma Bhushan Medicine, in 1982 and the G. J. Watumull Foundation Prize in 1964.

Compiled by:
GARIMA VERMA,
B.Sc. (H) Zoology, III Year
TIYA CHIKARA,
B.Sc. (H) Zoology, II Year

References:

1. EducationWorld. (n.d.). Eight women scientists of India who made history. Retrieved January 20, 2022, from https://www.educationworld.in/eight-women-scientists-of-india-who-made-history/
2. Bharpilania, S. (2021, March 4). 14 Indian Women In Science You Should Know About. BuzzFeed. Retrieved January 20, 2022, from https://www.buzzfeed.com/sumedha_bharpilania/14-indian-women-in-science-you-should-know-about

IRIDESCENCE 2021-22

Success Stories of Our Alumni

INTERVIEW WITH RICHA SIRMAUR

Richa Sirmaur, our outstanding alumna, is a Ph.D. scholar at the Indian Institute of Science, Bangalore. She graduated in B.Sc. (Hons.) Zoology in 2016 and went on to pursue Masters in Biotechnology from SPPU. With an evident ever-present smile on her face and an eagle's eye on her target, her journey post-Maitreyi is one you should definitely dive into.

We make many amazing memories in college. What is your fondest memory from your time at Maitreyi?

Indeed, there are a lot of college memories- be it the fun and seriousness of classes, or the exam days, viva voces, waiting and chit-chatting with friends before/ after the lectures, going to the canteen in the brief time we used to get in between our lectures, or the friends I made and the fun moments I've lived with them – I cherish all of them dearly. One of my favourite times was the trip to Nainital with all the batchmates and professors – it was amazing!

What inspired you to go into research? What is your favourite part of research?

Well, reading classical papers truly inspired me. I remember reading the one-page publication of DNA structure by Watson and Crick, and wondered how such an amazing discovery happened by merely chasing one's curiosity – that made me adamant about pursuing research- because when you follow your interest by posing a question, both negative and positive results help you understand a little more about that subject, and that certainly augments the progress in Science.

There must have been times when you felt low in your academics, so how did you cope up, or what strategies did you adopt during that period?

Indeed, there were times when I'd felt low, and despite working hard, I've experienced failure. The key to handling such a phase is "perseverance". It might sound cliché, but trust me on this, if you keep going and surround yourself with some faith, you'll get through it with flying colours.

How did being a graduate from Maitreyi help shape the person you are today?

Honestly, I've learned A LOT from college! It has played a pivotal role in transforming me from my naïvete to the person I am today, as it has immensely helped me grow as a student and an individual. The exposure to different perspectives and readiness for the outer world have been bestowed on me by this place.

What are you most proud of personally and professionally, as a Maitreyian?

Personally, Maitreyi has made me very confident and independent, and I owe that to the experiences I had, the people I was surrounded with, and my professors! Professionally as a Maitreyian, I am proud to have an understanding of all the fields and that I received merit certificates all three years of graduation, which was acknowledged in many of the interviews I had.

Even after graduation, were you comfortable in reaching out to the Maitreyi faculty and asking them for guidance or help?

Absolutely! I am still in touch with many of them. They have always been ready to provide me with recommendation letters, guidance and motivation to make decisions and I have received their blessings at every step of my journey. I am grateful to have such mentors at an early stage of my academic career. A 'thank you' wouldn't suffice.

We are all aware that STEM is considered one of the most challenging fields to be in. What are some words of wisdom you would provide to help manage a work-life balance as a scientist?

Always remember that your work isn't your life; it's a part of your life. Ergo, it is equally important to have fun, learn things that can help you grow, have hobbies, go on trips, play, or do whatever that can take your mind off work for a while! (If Archana ma'am is reading this, I am sure she is going to smile because she used to tell this to me a lot, and of course, I have realised it a bit late - But here I am, telling others not to repeat the same mistake- do not forget to HAVE FUN!)

Can you, in brief, summarise your academic journey for us- including what entrances you appeared for, and how you navigated applications to universities post-Maitreyi? It would surely help students who'll be reading our magazine.

After graduation, I wrote several exams: IIT-JAM (Biological Sciences), JNU, CEEB, SAU, Biotechnology, BHU, PGI-Chandigarh, UOH, and TIFR. Honestly, I was only preparing for the first exam- IIT-JAM because I wanted to join IISc. Apparently, I got 13th rank in the exam, but I lost that chance because of limited seats. After that, whatever exam I wrote, I somehow managed to get through in most of the programs. I also got a merit offer from Delhi University to pursue my master's in Zoology. I received a full scholarship offer from SAU, however, when I got an offer from the Department of Biotechnology (Pune University) via JNU-CEEB merit list- I chose that. Fast forward to Ph.D. entrances, I wrote GATE, CSIR, and DBT. I had cleared the exams, and sat for the interviews at IISc (and other institutes as well), finally landing at the reputed Indian Institute of Science.

A final message for your juniors here at Maitreyi.

Dear Juniors,
You are at a very esteemed college- first, feel blessed and know that you have all the possible opportunities in your hand right here, right now. So, work hard and dream big because you can achieve anything you work for.
Have strength to change, a desire to learn, and stay positive. And most importantly, have patience and believe in the timing of your journey. No matter how difficult your dreams may seem at the moment, you will sail through and reach your destination eventually!
All the best, you wonderful women!

Strange animal facts you wouldn't have heard before!


Image source: flickr- darkroomillusions

Just like babies and young children suck their thumbs, baby elephants suck their trunks for comfort. Cute, right?


Image credit: allfiveoceans.com

Have you seen a fish walk? It's actual! The red handfish uses evolved fins to 'walk' along the ocean rather than swim.

INTERVIEW WITH SIMRAN GOEL

From a bright spark to a global flame, Simran Goel is a stellar example of all the corners of the world Maitreyians can make a name in with sharp focus and sheer hard-work. Read on to know how she dared to dream big and ultimately paved her way to becoming a Ph.D. student at International Max Planck Research School for Living Matter, Germany.

How did being a graduate from Maitreyi help shape the person you are today?

The long working hours from 8am to 5-6pm on the day of practicals made me habituated of working in a lab all day and managing my time efficiently. Also, the research project with Dr. Meena Yadav during my Bachelors gave me a lot of exposure and confidence to find my footing in the field of research. Personally, I remember Anshu ma'am always pushing us to be financially independent, and her words of encouragement have stayed with me through the years.

What are you most proud of personally and professionally, as a Maitreyian?

I pay credit to the academic achievements in Maitreyi that made me proud and self-reliant. The most proud moment for me was when I received a scholarship for securing 100% marks in Cell Biology and Genetics practicals in 2nd year. Dr. Renu Gupta informed us that it was for the first time in the history of Maitreyi that 4 students are going to receive the scholarship from the same batch and knowing I was one of them made me feel extremely overjoyed. Being in the top 20 from the Delhi University made me most proud in my Bachelors.

How was your experience with extra-curricular societies in your college days?

I did not join any society, but I had been engaged in extra-curricular activities outside the college that didn't overlap with my classes. I served the NGOs on weekends and also participated in an Art of Living course that they organised in regard to their world culture festival.

Even after graduation, were you comfortable to reach out to the Maitreyi faculty and ask them for guidance or help?

Yes, all the professors are always ready to help at any point of time. I would specially mention Dr. Meena Yadav who always fulfilled my recommendation letter requirements for Masters or PHD applications even when the deadline was in a few hours. She is always readily approachable, and has always been just a phone call away.

It is crucial to judge people around you especially when you are studying somewhere far away and with an atmosphere different from home, so how did you identify your social circle being good or bad?

According to me, the main testing point to identify good people worth investing time around you is when you are not doing well mentally or physically. The right support system will stick with you in hard times. I had friends who would sometimes give me a

head massage if I was drained. I judged people when I was sick or when I missed my family. You get to know who supports you and who are truly indifferent or looking to take advantage of you in those moments.

What was the biggest challenge throughout your journey? What skills do you think helped you deal with that challenge?

Applying to and finding a Ph.D. position is tough, especially when you are applying abroad. Designing your CV, cover letter, statement of purpose and then presenting yourself on a sheet of paper is a tedious task. The second most challenging task was to face the interviews. As it is the first time in your life you get interview exposure, you need to have certain skills rather than just academia. The way you carry yourself, the confidence you possess and the dedication towards your subject, all play-in in that moment.

Can you, in brief, summarise your academic journey for us- including what entrances you appeared for, and how you navigated applications to universities post-Maitreyi? It would surely help students who'll be reading our magazine.

After 12th standard, I joined Maitreyi and prepared for Biotechnology in IIT for Masters, but had to drop the idea because of the new rule that stated that only students with Maths as a subject could pursue Biotech in IIT. So as an alternative, I had thought of appearing for GRE to apply to the US, but my name appeared in Merit List of Masters in Zoology in Delhi University, so I decided to stay back. I applied for summer internships through IAS and simultaneously prepared for the NET-JRF exam. After completing the summer internship, I joined the lab of a professor in DU itself and completed my Master thesis under his guidance. After my Masters, I applied to various labs in Canada, Australia and Europe, the Central Application Universities and also to Indian Institutes like IISC Bangalore, JNCASR Bangalore and ICAR. I cleared the JRF exam with AIR 57, and also got my first application from a research hospital in Canada. I made up my mind when I got a call from Max Planck Institute, Germany which had been my dream for ages. I went for a walk-in interview, got selected and finally joined there.

What is one skill you think us young scientists should work on developing?

Definitely presentation, especially how to make your slides and speech impactful. No matter which career you take, you need to learn and practice how to convey the substance well. Other courses such as those in project planning and leadership also really help, because in your higher studies, it's not only about studying but also working in a new environment and those extra skills help you take charge very easily.

What is one little tip you'd like to give your juniors?

We have an amazing course structure which allows you to explore everything in your graduation; however, there are some papers or subjects that are particularly difficult- Comparative Anatomy, for example. When I used to feel like I'm in a rut, I used to change the spot where I used to study, and study in a place like a park for instance. I remember my PG days when I used to sit with my friends, take a break and just vent with them. It would help clear my mind a lot; so make time for yourself, keep taking a break and interacting with your friends, it helps a lot in coping with stress.
The key to having a good work-life balance would be knowing what to prioritise. Set your priorities and organize your time accordingly- never forget to make room for things that you need and that make you happy!

Strange animal facts you wouldn't have heard before!


Image source: Pinterest

The strike of an eagle can be 2X stronger than a rifle shot (gasps). I wonder if the military plans to recruit eagles as soldiers.


Image source: istockphoto

Kangaroos can't fart!
Now, does that make them the most ethical animal?

INTERVIEW WITH TEJASWINI CHOUDHURY

Tejaswini moved to Delhi leaving her home far behind, but with her unending zeal, she has made herself at home at one of the most reputed institutions of the country. This is her journey from having been a Life Sciences major here, to now serving as a Junior Research Fellow in AIIMS, New Delhi.

What inspired you to go into research?

I used to be a very curious child & my parents used to encourage me a lot to feed my inquisitive nature and keep searching for answers. From a very early age, I wanted to become a scientist. In quest of finding answers to some questions like why do we fall sick, how are humans so different in so many ways but also so alike, or how our body functions with all its intricacies. It was the urge to answer these questions that made me go into research; the thirst of discovering something new kept me pursuing research as a career choice.

We make many amazing memories in college. What is your fondest memory from your time at Maitreyi?

There are so many beautiful memories that it's difficult to choose one. But still, one small moment did score in my heart forever. I remember the day when Rakhi ma'am returned the answer sheets of the internal practicals of Comparative Anatomy and Developmental Biology paper. Though I scored the highest in the class, ma'am had written in bold red letters: 'Good. But we expect you to do better. ' It was a very emotional moment for me to know someone believed in me so much and wanted me to strive for more. I loved being in college- my friends, the gardens, all of it made me want to keep going back for more!

There must have been times when you felt low in your academics, so how did you cope, that is, what strategies did you adopt during that period?

It was a journey of several lows. I had to miss a lot of classes in my first semester as my health deteriorated since it was difficult for me to adapt in Delhi, which was far from my hometown. One thing that helped me go through was my stubbornness to do well; so coupled up with the right support from my friends and teachers, I kept striving till I settled in and did well here. In this time, I learned improvisation, which is a very useful skill even in a workplace, and finding a good support system to aid your growth and help you through the strenuous periods in your journey.

How did being a graduate from Maitreyi help shape the person you are today?

The help & guidance one gets at Maitreyi is simply unparalleled. The efforts of all the teachers in every domain, be it in the classes, organizing conferences or in promoting a research-friendly environment is admirable. For me, it was my home away from home. I got a major boost in my self-esteem here; so I strongly advocate the importance of empathy, kindness and mindfulness in our actions too, to create a positive work-environment and community for everyone around.

What do you think was the propelling factor in your journey towards research?

When teachers expect a lot from you, it motivates you to go beyond your capacity, and that is exactly what happened with me. So I never got tired of doing work, as I never wanted my teachers to be disappointed. In hindsight, that was a major force pushing me towards research and helping my overall evolution as a person.

What are you most proud of personally and professionally, as a Maitreyian?

Personally I'm proud of the bond that was established with my teachers. It was literally the source of my motivation. Professionally, I'm proud of being selected in many top institutions like IISER, AIIMS, ACBR, DU, BHU and HU for further studies after graduating, which was only possible because of the quality education and exposure one gets at Maitreyi. I finally took admission in AIIMS, New Delhi & completed my Masters in 2021 and am currently working as a Junior Research Fellow here at AIIMS.

Some advice for your juniors.

Academically, I would say always look to build your knowledge base in multiple dimensions. I always used to study the whole syllabus of a paper from the books referred by our teachers. This would help me get a detailed knowledge of the subject matter. Maintaining a good practical file was also really important to me because it helped me understand things with a creative visual imagination, a trait which is very important in any research. Personally, consistency is key. Patience is very important for every researcher. You might have to work continuously for hours and not get any results even then. Somedays will be very tiresome, some will be fruitful, but at the end of each day, you will have to be focused on and keep working on your goal no matter what. Always remember: you are stronger than your problems.

Lastly, I would say that it's very, very important to take account of and appreciate yourself for the little things, may it be a PCR well-optimised or a gene well cloned, for in the end, it is the little things which make this journey worthwhile. Making time for the things you love to do keeps your mind fresh and gives you the inspiration to generate new ideas- so always remember to make time for yourself, and reach out for help whenever necessary!

Strange animal facts you wouldn't have heard before!


Image source: sleepadvisor.org

What's the longest you've ever slept? 12 hrs? 16? Or 24?
Although not very common, under extreme conditions, a snail can extend its sleep for almost 3 YEARS!

How many penguins are in the world's largest colony?
1.5 million birds. the biggest supper-colony of adelie penguins was spotted from space thanks to their trail of urine and guano.


Image source: https://storage.googleapis.com/oceanwide_web/media-dynamic/cache/widen_1600/media/default/0001/05/30627f237982b80399f5d2db0c8daeeea38a5950.jpeg


Image credit: Kriti, B.Sc. Zoology (H) ii Year

How many insects are alive at a time?
There are 10 quintillion (10,000,000,000,000,000,000) insects alive at any time.

Compiled by:
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B.Sc. Life Science, III Year
SONIYA BAGHEL
B.Sc. (H) Zoology, I Year

References:
www.factanimal.com
www.thedodo.com
www.boredpanda.com

IRIDESCENCE 2021-22

Brainstorming Corner

SCRAMBLING ORGANELLES

1. ALNSECIPMOD ULECRIUMT _____
2. LOSSESMOY _____
3. EVUALCO _____
4. ULCNARE ONVELEEP _____
5. ELLC MBNAEEMR _____
6. CELL ALWL _____
7. SLTEYETONCOK _____
8. ALHSOLTCOPR _____
9. OLGGI SBEDIO _____
10. OCHROHYPLLL _____
11. ULCUNOSLE _____
12. TOAINMCHR _____
13. ACOTLPSMY _____
14. IHDRNCTAOIOM _____
15. OISEBRMOS _____
16. UCSLEUN _____

Word Bank

vacuole	cell wall	nucleus	cell membrane
golgi bodies	chloroplast	nucleolus	cytoplasm
chromatin	endoplasmic reticulum	chlorophyll	ribosomes
mitochondria	cytoskeleton	nuclear envelope	lysosomes

KRITI
B.Sc. (H) Zoology
II Year

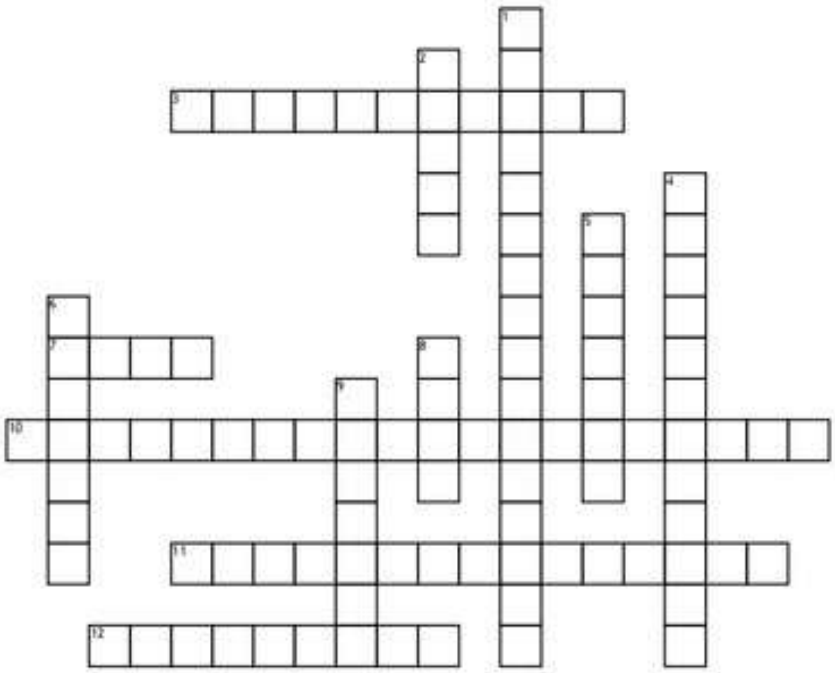
PLAY WITH BONES

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

Carpals
Cervical
Clavicle
Coccyx
Cranium
Femur
Fibula
Humerus
Ilium
Ischium
Lumbar
Mandible
Maxilla
Metacarpals
Metatarsals
Patella
Pelvic Girdle
Phalanges
Pubis
Radius
Ribs
Sacrum
Scapula
Sternum
Tarsals
Thoracic
Tibia
Ulna
Vertebrae

KRITI
B.Sc. (H) Zoology
II Year

FUN WITH ECOLOGY



Across

3. Animal that feeds on dead organic materials

7. An animal that is hunted or killed by another animal for food

10. The progressive replacement of one dominant type of species or community by another in an ecosystem until a stable climax community is established

11. The process in which fixed nitrogen compounds are converted back into nitrogen gas and returned to the atmosphere

12. Community of organisms together with their physical environment

Down

1. The increasing concentration of a substance, such as a toxic chemical, in the tissues of organisms at successively higher levels in a food chain

2. The ecological role of an organism in a community especially in regard to food consumption

4. A type of symbiotic relationship in which one organism benefits while the other is neither helped or harmed

5. A graphical model showing the interconnecting food chains in an ecological community

6. A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding

8. An organism that a parasite lives in or on

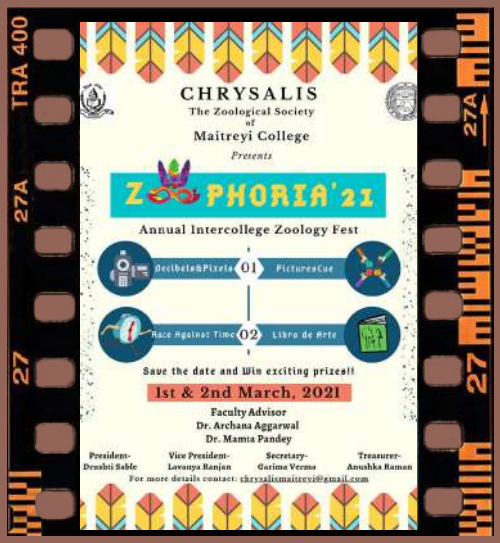
9. The natural home or environment of an animal, plant, or other organism

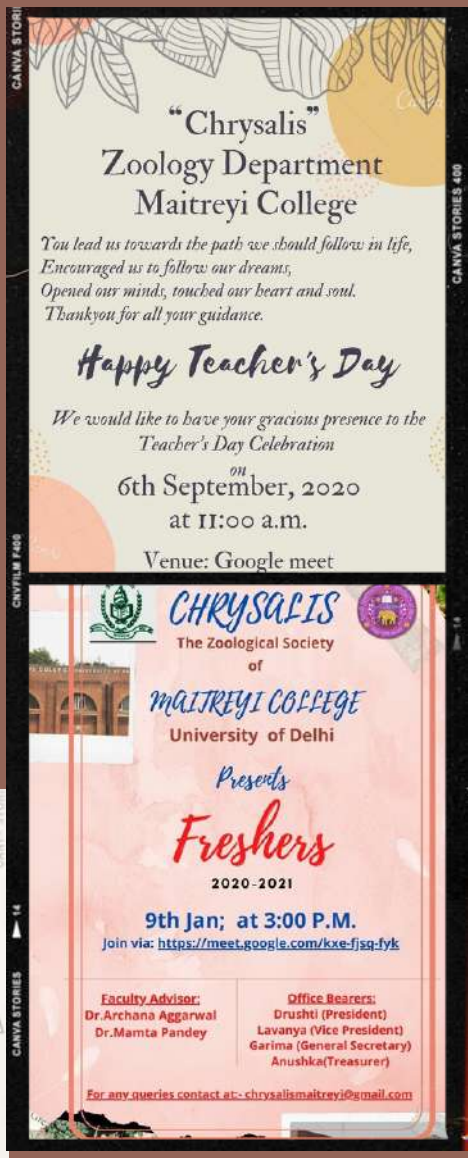
KRITI
B.Sc. (H) Zoology
II Year

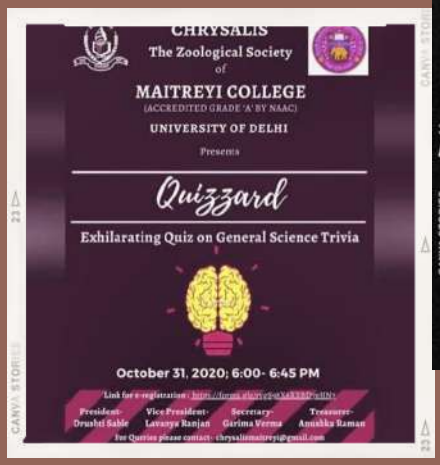
IRIDESCENCE 2021-22

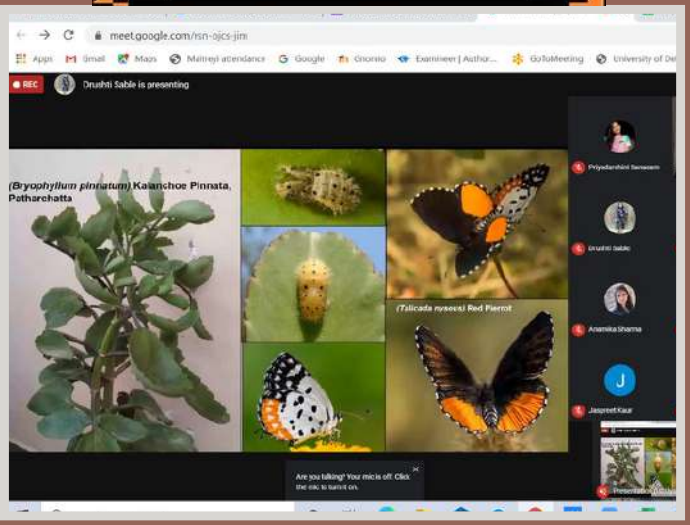
ZOOLOGY DEPARTMENT (2020-21)

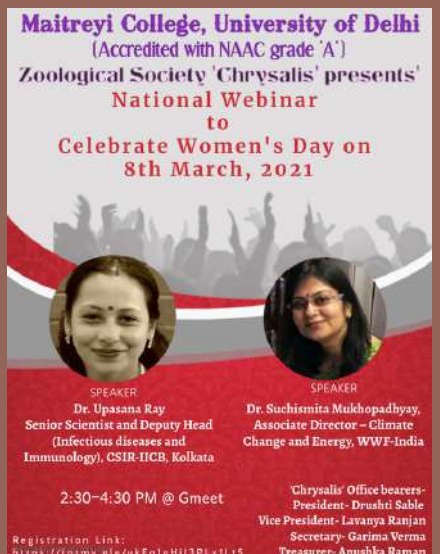
Chrysalis 2020-2021

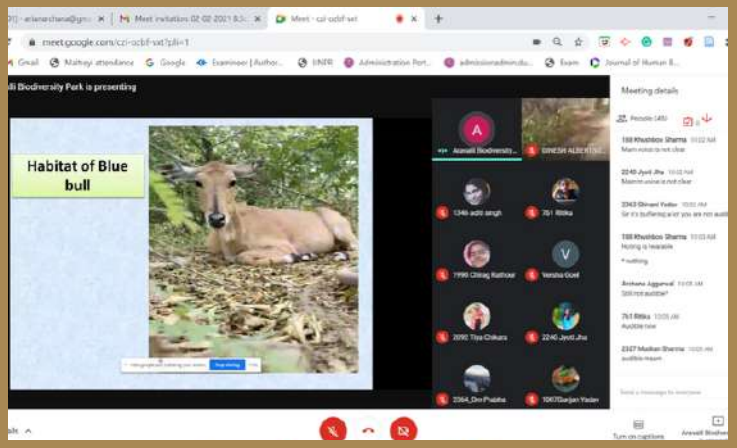




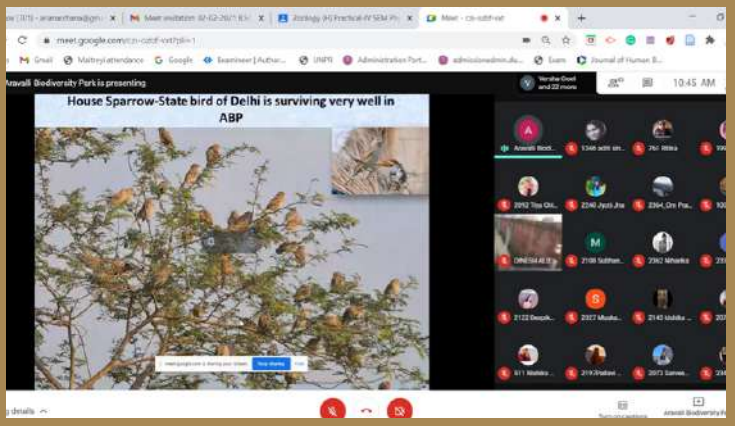








A virtual visit to Aravalli Biodiversity Park



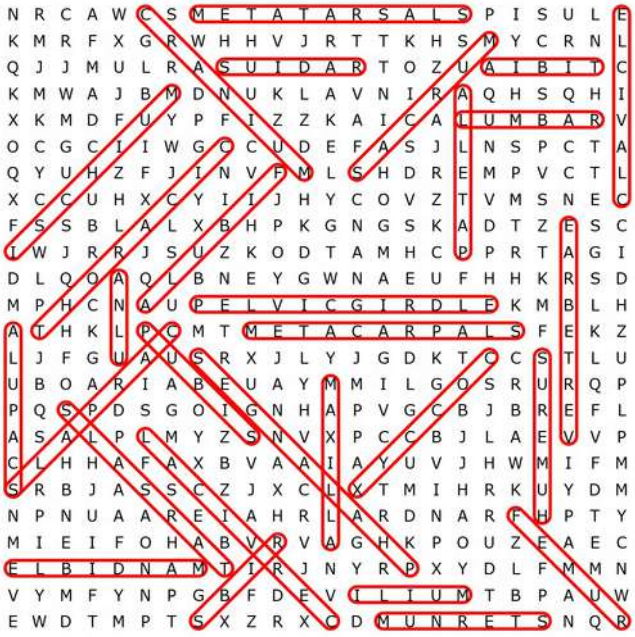
YEAR 2020-21 AT A GLANCE

BRAINSTORMING CORNER
ANSWERS

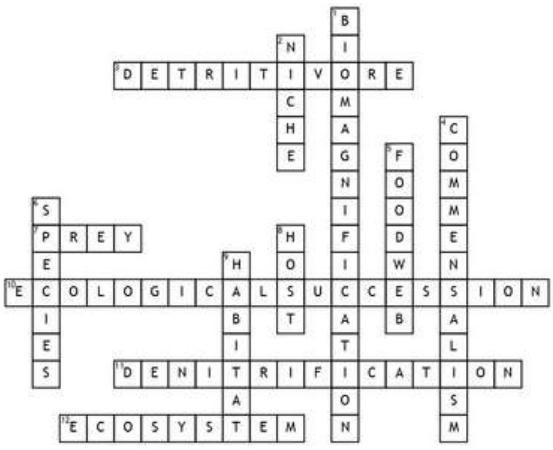
SCRAMBLING ORGANELLES

1. ALNSECIPMOD ULECRIUMT endoplasmic reticulum
2. LOSSESMOY lysosomes
3. EVUALCO vacuole
4. ULCNARE ONVELEEP nuclear envelope
5. ELLC MBNAEEMR cell membrane
6. CELL ALWL cell wall
7. SLTEYETONCOK cytoskeleton
8. ALHSOLTCOPR chloroplast
9. OLGGI SBEDIO golgi bodies
10. OCHROHYPLLL chlorophyll
11. ULCUNOSLE nucleolus
12. TOAINMCHR chromatin
13. ACOTLPSMY cytoplasm
14. IHDRNCTAOIOM mitochondria
15. OISEBRMOS ribosomes
16. UCSLEUN nucleus

PLAY WITH BONES



FUN WITH ECOLOGY



IRIDESCENCE
2021-22

Iridescence
Illuminating Minds

ZOOLOGY DEPARTMENT
MAITREYI COLLEGE
UNIVERSITY OF DELHI

Front and back cover image credit:
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