ZOOLOGY DEPARTMENT, MAITREYI COLLEGE ISSUE 3: 2022-23

IRIDESCENCE

BIOSPHEROS

WHAT, WHY AND HOW OF BIOLOGY

IRIDESCENCE: 2022-23

TABLE OF CONTENTS

IMAGES: SONIYA BAGHEL
B.Sc. (H) ZOOLOGY
II YEAR

FROM THE PRINCIPAL'S DESK

Dearest Readers

I am extremely glad and delighted to release the third issue of Zoology Department e-magazine, Iridescence.

Iridescence has been consistent in focusing on diversity in the field of biological science, while showcasing the equally diverse talents of the students. The magazine has continued with the very interesting sections of interviews with a scientist and our alumnae, as have the various infographics found their way into this issue as well.

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

MEET THE EDITORIAL BOARD

BAGMITA BISWAS
B.Sc. Life Science, III Year

Life is full of uncertainty and nobody knows what's going to happen...but being a part of Iridescence will always remain an ultimate pride!
Nothing amazes me more than being so lucky to work with a group of such sweet, charming and pretty women at Maitreyi. Being a part of Iridescence, I learned that if your team is there for you, you can achieve anything you want to- and this talented bunch not only encouraged me to help bring this edition to life, but also gave me the lesson that teamwork always leads to a win! Being a part of this team for the first time helped me in a lot of ways. Whether it is encountering new people here or learning many skills. I would like to thank our teachers for giving me the opportunity to work on such a beautiful project, and to all our contributors who enthusiastically participated to showcase their creativity and helped us grow and give the shape to this volume.
With this note, I sign off from here to let you begin the wonderful journey into our handcrafted magazine. Hope you'll love it reading the way we loved bringing life to it!

DEEPIKA WADHWA
B.Sc. (H) Zoology, III Year

It's that time of the year when we present to you our fabulous compilation, Iridecscence. In these pages, we are committed to providing you with a publication that showcases the best of the students' creativity, knowledge, and perspective.
We strive to make this magazine a valuable resource for all our readers that offers a range of informative and engaging articles, stories and artwork that not only entertain, but also inspire and inform. Working on this was definitely an enlightening and a very enriching experience. I am grateful for the opportunity and kudos to the team which together gave it the shape it is in today. I hope your experience of going through this edition will be as dazzling as its name!

PRASHANSA
B.Sc. (H) Zoology, III Year

Semantically, 'Iridescence' refers to the phenomenon of certain surfaces that appear to gradually change colour as the angle of view changes- like soap bubbles, butterfly wings or a mineral like opal. The result is a dynamic, beautiful and unique glow of a myriad of shades. The third edition of our magazine lives up to its name as a canvas of extraordinary ideas woven together by the students, faculty and alumni, allowing their talent to shine and sing through the pages. It's my privilege to be a part of the Editorial Board for a second time and also get to interview and learn from remarkable women in allied fields. I hope you have a good time learning here- and to my juniors, keep indulging in your passions because the wonderful team at Iridescence will always find room for you! I am incredibly excited for you to dive in headfirst into our Biospheros- Bon Voyage for your journey into this volume! ❤

JYOTSNA MISHRA
B.Sc. Life Science, II Year

An iridescent object is known to exhibit multiple colors, creating a rainbow-like effect. In a similar vein as our name, Iridescence, I hope that pursuing each page of this publication adds a variety of hues to the unfathomable sea of your knowledge, living up to its title.
My appreciation goes out to the advisory board, and my fellow members for providing me with such a wonderful opportunity to maximize my college experience.
Every minute of the last few months, from the interview for this position until now that I've arrived at the conclusion of the road, has taught me something new.
The ongoing efforts of each member inspired and humbled me all at once, and I hope to have the same chance again the following year.
May we soon cross paths again!

ISHANI
B.Sc. Life Science, II Year

Here at the beautiful span of ideas that is Iridescence, one can see wonders ranging from the fascinating animal kingdom to breathtaking scenes of nature, holding the vivaciousness of underlying concepts. Every page is an encounter with mind-blowing facts and eye-catching work!
Working for the first time in this e-magazine was a very rewarding experience that helped me hone my skills as I explored my creative side. I am grateful to my professors for giving me the opportunity to be a part of this enriching venture, and to my teammates for their constant cooperation and support!

HIMANI CHOUDHARY
B.Sc. Life Science, I Year

Welcome to the latest issue of Iridescence-a symbol of the complexity, interconnectivity, impermanence, and unpredictability of reality. As always, we are thrilled to bring you a diverse range of articles and features on topics that we hope will inform, entertain, and inspire you. In this issue, we delve into various fields of biology. At Iridescence, our mission is to provide you with engaging, thought-provoking content that makes a difference in your life. Whether you're looking for research in today's era, tales of travels, social biology, mysteries of the living world or simply a good read, we're committed to delivering it to you. I want to take a moment to express my gratitude for the invaluable guidance and mentorship that my professors and seniors have provided me throughout the journey.

ISHIKA
B.Sc. Life Science, I Year

"Nothing great in the world has been accomplished without passion."
The waiting is over, the time has come. After two successful editions, once again we are here with IRIDESCENCE, the most awaited third edition of our Zoology Magazine.
Iridescence serves as an array of informative as well as fascinating stuff. Just like the Gods and Demons churned the ocean of milk to extract nectar, we have tried to churn out the creativity of those around us. It fills my heart with immense joy and pride as I see the culmination of our creations in the successful continuation of this glorious legacy.
I am eternally grateful for being a member of the editorial board and feel truly blessed on getting an opportunity to work with such dedicated co-members as well as our dear professors. We hope you enjoy reading this as much as we have enjoyed making it.

NISHTHA BHATNAGAR
B.Sc. Life Science, I Year

As a member of the creative team for the magazine, I have had the opportunity to work on a variety of projects and collaborate with a diverse group of individuals responsible for conceptualising, designing, and creating content for the magazine.
One of the things I loved about working on the magazine is the constant flow of new ideas and challenges. Whether it's brainstorming ideas for a new feature, collaborating, or fine-tuning the layout of a page, every day presents new opportunities to flex our creative muscles. Another aspect of my experience on the creative team has been the importance of communication and teamwork. We all bring different strengths and perspectives to the table, and by working together and sharing our ideas, we are able to produce work that is greater than the sum of its parts. Whether we are bouncing ideas off each other in a brainstorming session or having a feedback session, collaboration is key to our success.

SPRIHA GODBOLE
B.Sc. Life Science, I Year

Iridescence is not just a word, it's a feeling. The scintillating lives of the creatures surrounding us pave a new path for discoveries and inventions, and it is that which we hope to put in the spotlight.
Passion and enthusiasm are the two building blocks on which the scientific community work. I am beyond happy to have been part of the Editorial Board of this magazine. It has not only boosted my confidence but has also given me a chance to put my work to display. The entire editorial team, professors, students at large are to be credited for this remarkable publication. I hope that our readers will find it interesting as they scroll through our Biospheros!

ANUSHKA TRIPATHI
B.Sc.(H) Zoology, I Year

IRIDESCENCE is not just an e-magazine, it's an illuminating periodical that provides an insight into the ethos of the science focusing on zoology. With great zeal and zest, we proudly present you the third edition of our departmental magazine. The new edition is a celebration that showcases and applauds the potential, talent and vision of the contributors and the team members. As you scan through the pages the amalgamation of the long term hardwork of the editorial members along with blend of idiosyncratic taste from each contributor are clearly evident!
I am beyond grateful to be a part of Editorial Board and be able to witness an array of flair. Altogether it has been an exhilarating journey for me. I heartily wish all the readers my best and hope you shall enjoy the various pieces of creativity we have put together. Happy reading!!

ADVISORY BOARD

Prof. Renu Gupta

As we are ready to showcase the third issue of Iridescence, we have progressed towards making this magazine more and more governed by students, as envisaged originally in our first issue. Right from conceptualizing the theme to taking out the final form of the magazine, the team of students comprising this year's editorial board has done wonders, with very little help from the advisory board.

We have tried to be consistent in our efforts to make this magazine exhibit the varied aspects that biology has to offer while at the same time keeping up to the standards that the previous issues of the magazine have set.

As before, the experience of working with a new team of students, with their fresh and raw talents and ideas, has been extremely satisfying for us.

With a lot of learning from earlier issues, Iridescence started its third issue with new zeal and energy. The editorial board was selected after physical interviews for the first time. It was so satisfying to feel the motivation and vision of the students for their own magazine. The visibility and readership of the magazine itself are remarkable.

Dr. Anshu Arora Anand

ADVISORY BOARD

Dr. Archana Aggarwal

A wide range of contributions were received from alumni, scientists, students, and teachers, echoing their sentiments for the magazine. We also received many entries that captured the aesthetics of the biological world around us in the form of amazing photographs clicked by our students. So, each page of our magazine reflects the creative side of our contributors as well as the efforts put in by our editorial board members to bring out this issue of the magazine. Their creativity and attention to detail have helped to make our magazine a reflection of scientific acumen and unveil the amazing talents of our students.

We are thankful to all the contributors and readers for always being part of this beautiful journey. We hope that you will enjoy reading the magazine. We encourage you to share your thoughts with us so that we can continue to improve our magazine.

Dr. Jaspreet Kaur

STEMinist Era

"...LEARN, KNOW, ADVANCE!"

INTERVIEWEE:
PRASHANSA
B.Sc. (H) ZOOLOGY, III YEAR

Dr. Cristina Landeta, is an Assistant Professor at the Department of Biology, Indiana University. A post-doctoral scholar at Harvard Medical School, then a genome engineer and now with her own lab, Dr. Landeta's journey into the world of microbes is fascinating and awe-inspiring. A remarkable researcher and an iconic woman in STEM, Dr. Landeta's insights stir new thoughts in all of the young scientists. Read on to learn about her work, her journey and the nuances and potential of the field of molecular biology and bacterial genetics that hold the key to enhance human welfare.

INTERVIEW WITH DR. CRISTINA LANDETA

- **Can you, in brief, summarise your academic and professional journey? It would surely help students who'll be reading our magazine to get an insight into how to go about the entire process of entering and sustaining in the world of higher education.**

I majored in Chemistry, Pharmacy and Biology and I did my Ph.D. at the National Autonomous University of Mexico studying soil bacteria. Then, I moved to Harvard Medical School to continue my training as a Postdoctoral fellow where I focused on protein folding. After 7 years I moved to a Biotech startup company working as a Genome Engineer. Finally I moved to Indiana University as an Assistant Professor.

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

There are always ups and downs in life, I've had many in my journey. I try to do other extra-activities that give me joy when something in my scientific life is not going well. I then go back and solve whatever the problem is with a refreshed mind.

- **What were your favourite subjects in college? Was there a professor or mentor who particularly inspired you? How did they leave an impact on your journey?**

I was interested in many things in college, I loved organic chemistry, biochemistry, pharmacognosy, biology, microbiology, clinical biochemistry and more. Several professors had a lot of impact on me.

- **Your research primarily focuses on microbial interactions and pathogenesis, and also explores the domain of the gut microbiome. What drove you towards this particular specialization- and how do you as a researcher feel a study of the same is important in today's world?**

I have a broad background in bacterial genetics, molecular and synthetic biology, microbiology and biological chemistry. I'm interested in the study of oxidative protein folding in bacteria given that this process is necessary for antibiotic resistance, virulence and growth of pathogenic bacteria and therefore it is a novel target to develop new antimicrobials. As a postdoctoral fellow I laid the groundwork for my lab's research by developing screening methods that allow the identification of small molecule inhibitors of the enzymes involved in disulfide bond formation (Landeta et al., 2015). Using high throughput screening of small molecule libraries, we identified inhibitors of these enzymes which represent starting scaffolds to develop more effective inhibitors (Landeta et al., 2019, Landeta et al., 2017). I also identified the enzymes involved in disulfide bond formation in two pathogens and demonstrated their importance in virulence and growth (Landeta et al., 2019, Ke et al., 2018). My laboratory is using my prior work to develop more effective inhibitors with potential therapeutic benefits. These molecules are also helping us study disulfide bond formation in *Escherichia coli* and discover their role in two other model organisms *Pseudomonas aeruginosa* and *Mycobacterium tuberculosis*. We aim to expand the study of disulfide bond formation in the gut microbiome and the impact of this pathway in human health and disease, for which I spent one and half years in a start-up company to learn synthetic biology tools to engineer organisms that are not laboratory model organisms.
I think this is important to study in today's world because we're facing a silent pandemic, antimicrobial resistance, and we're facing an enormous challenge to target bacterial infections due to lack of innovation and antibiotic discovery after the golden antibiotic era.

- **What inspired and led you towards research as a career- and what are some things you enjoy in this field?**

Since I was a kid I was interested in living organisms because my parents instilled it on me even though their careers were different. In middle school I remember loving the days we had to do "experiments" in laboratories. In high school I spent long hours in an analytical chemistry lab. Around this time I joined the Biology Olympiad team of my school and the Professor used to take us in groups to her home to study. She had a huge library, I had access to her books from botany, biology, microbiology, cellular and developmental biology and more. It was a paradise for me because she also had a microscope at her home and we could use it. Thanks to her I took this path, I didn't know it was called research back then but it sparked my curiosity to first learn what is known and then to discover what is unknown. This is what I enjoy- understanding new things, uncovering a new piece of information in the puzzle and generating new knowledge based on data.

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

Being away from family was very challenging in my first years living in another country. Thankfully technology has been always there to keep us connected, first skype, then zoom and now WhatsApp.

- **We make the most wonderful memories in our time as a student. What are some of your favourite memories and experiences as a Biology student?**

I have a lot of good memories with my friends doing practices in labs, those were very fun. From pharmacology, hemmatology, clinical biochemistry, immunology to toxicology and so on. I think one I remember vividly is when we were practicing venipuncture and I was terrible at it. So, a friend of mine who had a ton of experience was teaching me how to do it in another arm's friend. I followed every step with shaky hands except that at the end once I had collected the tube I forgot about removing the needle from my friend's arm. I think we laughed a lot about how bad I was, I only cared about having the blood but not about the patient. Thankfully I didn't end up in a clinical lab.

- **Now as a microbiologist, what are some things about the field or in-general that you learnt that you feel others working on the same path should know- and what advice would you give to them?**

Be curious, **self-teaching** is necessary in this path.

"SCIENCE IS A MARATHON!"

INTERVIEWEE:
PRASHANSA
B.Sc. (H) ZOOLOGY, III YEAR

Pioneers pave their way through life in pursuit of their passions. Gargi Chaturvedi (batch: 2014-17) is our alumna of B.Sc. (H) Zoology. She is currently a Ph.D. candidate at the University of Oxford, United Kingdom, having completed her M.Sc. in Life Sciences from IISER Pune. Driven and brilliant, Gargi is a stellar example of unshakeable hardwork and determination. Read on to learn more about her journey in the world of biology!

INTERVIEW WITH GARGI CHATURVEDI

- **Can you, in brief, summarise how you navigated your academic and professional journey at and post-Maitreyi? It would surely help students to get an insight into how to go about the entire process of entering higher studies.**

After finishing school I enrolled at Maitreyi for an undergraduate degree in Zoology in 2014. It was here that I was first exposed to the research methodology under the guidance of Dr. Meena Yadav. Under her supervision, I investigated the effects of medicinal plants on the human RBC and plasma concentrations. These projects lead to the publications of 2 small research papers. Upon the completion of my degree in 2017, I joined the Indian Institute of Science Education and Research (Pune) for an integrated PhD course. My most prominent work was in the field of bryology under the guidance of Prof. Anjan Banerjee. It was here that I was introduced to the world of Molecular Biology and I contributed towards a project which resulted in a publication in "Plant Physiology".

Apart from this, I also gained some research experience in the fields of cell biology and Immunology. It was in 2020 when I decided to take an exit from my course with a Masters (by research) degree and pursue a PhD from a lab of my choice abroad. During the lockdown I started actively applying at labs and institutes abroad, I received many rejections but finally got selected at a few universities as well. I am currently pursuing my PhD in the field of Evolutionary Developmental Biology at the University of Oxford under the guidance of Dr. Laura Moody.

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

There have been many instances when I have felt distraught, had self doubts and wanted to give up, especially during the pandemic. Most of my applications were getting rejected and I had very little hope for my academic future. What kept me going was the support from my friends and family who always encouraged me. A good routine and physical health is very important for mental health. My experiences have taught me much about the importance of a good work life balance.

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

The biggest challenge that I had to face was learning to deal with people in academia. I really wish science came without its politics. Irrespective of the topic, what lab environment and PI works best for you is crucial for doing good research. The skills I have acquired in this case are learning what PI- student relationship and working style suits me.

- **What were your favourite subjects in college? Was there a professor who particularly inspired you at Maitreyi? How did they leave an impact on your journey?**

My favourite subjects in college were Cell Biology, Immunology, Developmental Biology and Ecology and Evolution. Dr. Meena Yadav and Dr. Jaspreet Kaur have always inspired and encouraged me to work hard and pursue my ambitions. I thoroughly enjoyed Dr. Anshu Arora and Dr Brototi Roy's lectures as well. Their pedagogy and approach towards science shaped my way of thinking and widened my horizons.

- **Now as a researcher who studies Biology, what are some things about the field or in-general that you learnt that you feel others working on the same path should know and what advice would you give to them?**

I strongly believe in staying consistent and focused on whatever goal one is trying to achieve. Nothing is going to be easy, and you will not land your dream school or lab without a sustained effort.
Another important thing to keep in mind is maintaining a good work life balance. It helps to have hobbies on the side and preferably a physical activity. Science is tiring and challenging, but it is also a marathon and not a sprint. In order to stay productive it is essential to stay mentally and physically active with regular breaks in the form of vacations.

- **We are all aware that STEM is considered one of the most challenging fields to be in. As a woman in STEM, what are some words of wisdom you would give for managing a work-life balance?**

Managing a work life balance is not always easy. Even I sometimes cheat and sleep in on workdays. I find myself burning out every now and then. In order to keep my spirits up I attend music concerts, watch dramas and spend time with friends. Apart from this I also sketch, paint, play music and swim to stay calm. Research can be a gruelling experience and journaling on a regular basis could help gather your thoughts, this could also act as a form of mindfulness.

- **What are some skills or practises that you feel the younger generation should invest in inculcating in this day and age?**

As a person in Science it is very important to take an interdisciplinary approach towards your subject. In this day and age computational skills are both essential and in demand. I would suggest people to learn programming languages as a part of their curriculum, this can be done on a daily basis and there are many free resources for the same. Not only will this equip you to do research better but will also open up new job opportunities in the data science sector. Also not everyone pursuing science will be interested in mainstream academia, there are multiple options available like science communication, scientific writing etc. It would be wise to keep oneself updated about these.

- **A final message for your juniors here at Maitreyi.**

I believe everyone has a different path in life, and everyone will pave their own course. It is very hard to not compare your journey to someone else's, but this will only bring disappointment and sadness. You are doing this course for your personal reasons, try to make sure it counts and adds value to your life. Take it one day at a time and try to enjoy these days to your fullest.
Apart from this, always **keep your physical and mental health as a priority.** All the best!

"COME OUT OF YOUR COMFORT ZONE"

INTERVIEWEE:
PRASHANSA
B.Sc. (H) ZOOLOGY, III YEAR

Health is Wealth. No doubt healthcare is an industry which grows everyday and has several exciting career options for biology graduates today. Mansi Chadha, our Life Sciences (batch: 2015-18) alumna, is one such creative and dedicated individual who has forged her way through the industry after her Masters Degree in Biotechnology and time at National Center for Disease Control, Ministry of Health and Family Welfare. Driven, highly skilled and innovative, meet our star who embraces challenges and is making huge strides as a healthcare professional at Siemens Healthineers!

INTERVIEW WITH MANSI CHADHA

- **Can you, in brief, summarise how you navigated your academic and professional journey at and post-Maitreyi? It would surely help students who'll be reading our magazine.**

Making a firm decision about your career is challenging, and I experienced it from the time of deciding a right stream for me. I studied science in high school with PCMB and wanted to explore an integrated field. I enrolled in B.Sc. Life Science at Maitreyi College in the year 2015 and later pursued M.Sc. Biotechnology. To gain further expertise and know-how of the latest techniques in Life Sciences I undertook several internships with leading institutes & organizations and also represented a business plan at the National Entrepreneurship Competition (ABLE BEST 2018). Further, I got an opportunity to work on COVID 19 at National Center for Disease Control, MOHFW which paved my way to join Siemens Healthineers and within 2 years I've been promoted to Senior Manager Market Communications.

- **What inspired and drove you to go into this path- and what are some things you enjoy in your current profession?**

I would say my stint at National Center for Disease Control motivated me in entering the diagnostic line because of its direct relevance to societal healthcare. A part of my job encompasses troubleshooting and providing on the spot solutions to laboratory personnel. Liaising with subject matter experts, working on business strategies, conducting various events across the country, and networking with exciting people are some responsibilities which I relish.

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

The challenging phase for me was choosing a right career path. However, working at a premier public health institute during COVID 19 helped me strengthen my skills and land the correct job. Due to high workload during pandemic, I developed time management and work prioritization abilities which helped me stay focused and increased my productivity. Also, I invested time in short courses on topics like intellectual property, data analysis, Microsoft Office and effective communication- all of which made me feel more confident and competent in my day-to-day life.

- **What were your favourite subjects in college? Was there a professor who particularly inspired you at Maitreyi? How did they leave an impact on your journey?**

Reproductive Biology was a new introduction to our curriculum, which I valued the most since it helped me to understand myself through the lens of biology. Dr. Brototi Roy made the sessions very interactive and well understandable. I admired how she could turn any topic into a discussion. She is incredibly supportive and approachable for any assistance one may need, even today, and has played a pivotal role in my transformation.

- **How did being a graduate from Maitreyi help shape the person you are today? What are some lessons or values you think your alma mater provided to you that you applied at different stages of your life?**

College life is the most glorious phase. It is the time to deep dive in the ocean of new beginning and opportunities. This phase equips you to face challenges in life and creates a strong foundation of knowledge. I feel privileged to be a part of Maitreyi where discipline and being compassionate are the most practiced values. Having constant guidance, encouragement, and support from the teachers has been instrumental in shaping my persona.

Three years at Maitreyi instilled a certain kind of stability in my mind for making choices, and made me more comfortable and adaptable towards new circumstances and people around me. I am grateful to my alma mater for making me proficient enough to step out boldly.

- **Now as a professional in the field of healthcare, what are some things about the field or in- general that you learnt that you feel others working on the same path should know, and what advice would you give to them?**

The Healthcare industry in India is growing at a very fast pace and will generate thousands of job opportunities in the near future. Working in healthcare can entail many different positions and opportunities. Every individual is unique, discover your strengths. People who are outspoken can get into sales and marketing and those who want to build a career in R&D also have exciting opportunities. Involve yourself in internships or college projects, they would not only provide you a platform to gain practical exposure and network with people but also learn about behavioural aspects.

- **We are all aware that STEM is considered one of the most challenging fields to be in. As a woman from a STEM background, what are some words of wisdom you would give for managing a work-life balance?**

The work-life balance is challenging but at the same time of highest priority for any woman. As a person with a biological sciences background, I am aware of the health impact of a highly demanding work environment. To establish a work-life balance, **time management** is essential and personal, mental, and physical health should be given top priority. Meditation, workout, yoga can be effective to achieve a stress-free lifestyle.

- **What are some skills or practices that you feel the younger generation should invest in inculcating in this day and age?**

In the current competitive landscape, the industries require highly skilled manpower that are continuously upgrading themselves with the newer technologies. My advice would be to keep learning and gain as many skills as you can to make you the ideal candidate for the job profile of your choice. The learning should not stop even after landing a job, due to the dynamic nature of the industry. In general, effective communication and presentation skills make you stand out in any interview and later. Expertise in MS Office and other communication tools is a must these days. Soft skills such as punctuality, adaptability, humility etc. also go a long way in building one's career.

IRIDESCENCE
2022-23

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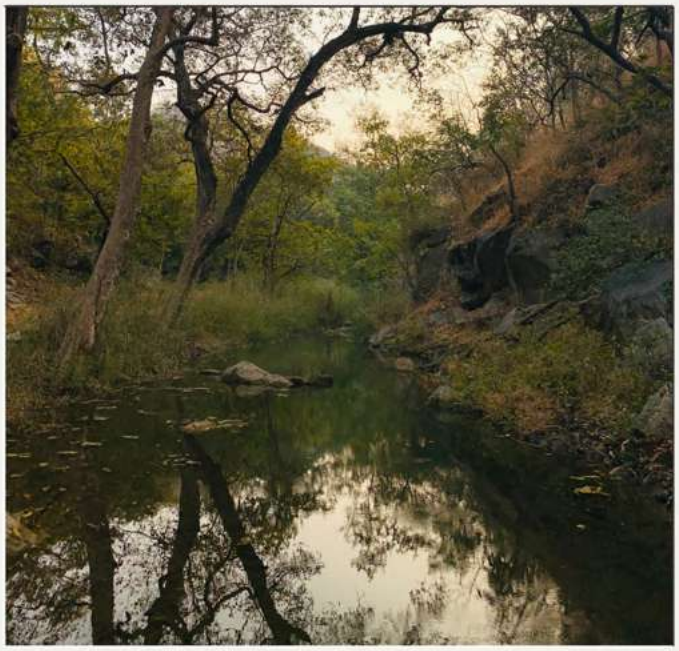
Unique

DIRECT

VANSHIKA SHARMA
B.Sc. LIFE SCIENCE
III YEAR



SURYANSHI ANAND
B.Sc. (H) ZOOLOGY
III YEAR

flash

CAMERA

CHAHAK RAWAT
B.Sc. LIFE SCIENCE
II YEAR

ANUSHKA TRIPATHI
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PLANET

DESIGN

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III YEAR

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II YEAR

NIYATI
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BATCH: 2018-21

ARTICLES

E-TATTOOS: MICRO-ELECTRONIC HEALTH MONITORS

NAIYA CHAUHAN
B.Sc. LIFE SCIENCE
III YEAR

Ever got inked a tattoo or thought of having it? I'm sure we all have at least heard or know about tattoos, that they are a form of body modification that is inked either permanently or temporarily into the dermis layer of the skin to form a picture, pattern or design. But what we don't know is about the breakthrough innovation which is Electronic Tattoos or Digital Tattoos.

E-tattoos can be made of flexible electronic components such as conductive ink and gold nanorods, graphene or various polymers with a rubber backing that can track important information.

A well known computer programmer and a successful entrepreneur Bill Gates decided to invest in this innovation and predicted that this new technology would one day replace smartphones.

With the development of 3D printing as well as circuit printing technologies, flexible electronics and materials applying on the skin, the so- called E-tattoos that can be there on the skin for some days or even weeks, have the caliber to revolutionize the field of healthcare technology and become one of the newest healthcare wearables.

IMAGE CREDIT: https://unsplash.com/photos/b0-7F_Xuh_0

They are so thin and flexible that patients might even forget that they are wearing them at all.

E-tattoos can monitor crucial biomarkers such as heart rate, blood pressure, hydration or blood sugar levels. Even though it is called a tattoo there is no need to pierce or puncture the skin, instead the device sticks on. It's very entrancing that it makes use of electronics not glue to have strong adhesion with the skin, once attached to the skin, the tiny electrodes can wirelessly detect electrical signals from inside the body such as those given off by cells within the heart that cause it to contract or pump blood through its four chambers and transmitted to smartphones or other connected devices. This device is powered inductively so there is a coil and when a wireless power supply is brought in proximity to this device, it delivers power to it through air.

To cut a long story short, electronic tattoo is a biotechnology based technique that aims to analyze and intellect information from the human body, along with the data this tattoo will also store medical and sports information with which it will be possible to prevent and control diseases as well as improve physical and sports performance with the help of vital signs.

With this device, we could create new devices that never existed before. Innovation and inventions have been brought to life by a distinctive and long-lasting collaboration that has the prospective to stretch the limits of modern Healthcare technology.

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RETURN OF THE SPOTTED ONE

DRUSHTI SABLE
B.Sc. (H) ZOOLOGY
BATCH: 2018-21

India has seen its cheetah population go from fairly widespread to extinction. In 1952, cheetah was declared an extinct animal in India after the last known killing of the animal from Chhattisgarh in 1947. The name “Cheetah” originates from Sanskrit language, meaning “the spotted one”. Cheetahs are the only mammalian species that went extinct in our country since our independence. The various reasons that led to this dreadful event were sport hunting, large scale capture, habitat conversion and decline in the prey base.

A balance in the ecosystem is ensured when biodiversity is in check. In this time when ‘Climate Change’ talks are the highlight between nations, conservation of both flora and fauna is a necessity. This need was realized by India and hence Project Cheetah was announced which includes introduction of the African Cheetah in the country. This is the world’s first ‘Inter-continental Translocation Project’ which is part of ‘Project Tiger’ under the supervision of National Tiger Conservation Authority.

With this project, it is aimed to introduce about 50 cheetahs to various parts of the country, in the duration of 5 years. In a highly publicized event with the hashtag #CheetahIsBack, at first 8 African Cheetahs, 5 females and 3 males, aged between 4-6 years were introduced in Madhya Pradesh’s Kuno National Park, from Namibia.

IMAGE CREDIT: https://unsplash.com/photos/7kyEghypC5E

Kuno National Park was selected because the forest type is tropical dry deciduous, having a large open canopy area similar to grasslands, good water management due to perennial Kuno river in the area, and adequate prey availability like chital, sambar, nilgai etc. As cheetahs are fast runners, grasslands were a necessity when relocation was considered.

Iran houses Asiatic cheetahs; they are given the status of 'critically endangered species' by IUCN as there are less than 100 remaining in Iran today. Asking for Asiatic cheetahs thus might have an otherwise detrimental effect rather than conservation. On the other hand, South Africa has a fairly high population of African cheetahs and they can provide India with the required number. On top of that South African cheetahs have maximum observed genetic diversity among other cheetah lineages, which gives an assurance of their high survival rate.

To have the desired result of the conservation project, various safety measures were taken by the concerned authorities. Utmost priority was given to the slow and steady release of the cheetahs following proper acclimatization to local conditions and environment. All the cheetahs are radio-collared for their continuous monitoring. No conservation effort is ought to be successful without public participation, this need was felt by the authorities and hence they created '*cheetah mitras*'. *Cheetah mitras* are a group of people from the nearby villages who are to spread awareness among the people for protecting the cheetahs. These people are meant to sensitize people regarding the animal and help in the conservation effort. Along with these a cheetah task force is recruited by the Ministry of Environment, Forest and Climate Change for monitoring the progress and health of the cheetahs, providing them necessary care whenever required. They also will be responsible for guiding the *cheetah mitras* to achieve the necessary awareness among the communities residing nearby.

The aim behind Project Cheetah is not just to achieve the evolutionary balance which was present historically but to develop a "cheetah metapopulation", that will help in conserving the animal who is on the verge of extinction from other places in the world as well. As it is first of its kind, its success will pave way for other conservation efforts necessary to be done for other species. The translocation process has been fruitful in cheetah conservation in South Africa itself and that is the reason we are able to see 4500 out of 7000 world's cheetahs in South Africa itself. If the conservation efforts succeed it will increase the number of cheetahs today available in the wild.

IMAGE CREDIT: https://unsplash.com/photos/tb4usTZrhLw

Translocation, although sounds promising, comes with its own concerns. Many experts applauded the efforts but also flagged various concerns; foremost of them, will these cheetahs be able to adapt to the environmental conditions of India. India and South Africa have slight similarity in climatic conditions but still acclimatization is a grave concern, because for these cheetahs to reproduce they need to accept and adapt to the environment available. India has adopted a strategy of 'coexistence' i.e., habitating cheetahs where tigers and leopards are already present. This might increase cheetahs' risk of survival as they could face attacks from tigers and leopards and also would have to compete for resources with them. As we have been devoid of cheetahs for more than 70 years now, lack of experience of understanding cheetahs in the wild among the authorities could be a problem. Also, risk of contracting diseases by the cheetahs can pose a grave danger to the project.

Everything has its firsts; if people would have been apprehensive about protection of wild animals through closed enclosures, many of our conservation efforts would have been a failure. This translocation experiment surely raises eyebrows but, if it succeeds, it will be a huge milestone and an example for conservation of other critically endangered and endangered species. The risks can only be reduced by continuous monitoring of the threats and problems experienced by our newcomer cheetahs and effective solutions to these problems.

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Indian Express newspaper: 17th September 2022

BOOM! HERE ARE SOME STRANGE ANIMAL FACTS:

- The kangaroo is unable to move backward due to its long tail and sturdy feet.
- Polar bears do not have white fur. In reality, their fur is translucent.
- Blood and brain are absent in starfish. They aren't even fish, anyway!
- A shrimp's head is where its heart is.
- The only animal that cannot jump is an elephant.
- Ants are always awake. Additionally, they lack lungs.

IMAGES:
https://unsplash.com/photos/qQWV91TTBrE
https://unsplash.com/photos/CAOZbgPa-7o

MYCELIUM PACKAGING - A SUSTAINABLE & VERSATILE ALTERNATIVE TO TRADITIONAL PACKAGING MATERIALS

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II YEAR

The packaging business has historically relied on conventional materials like paper, plastic, and Styrofoam. The environment is significantly impacted by these materials. For instance, Styrofoam takes hundreds of years to decompose, releases hazardous chemicals into the air, and contributes to the issue of oceanic plastic trash. Nonetheless, there has been a rise in interest in eco-friendly packaging substitutes in recent years, and mycelium packaging has emerged as the most promising solutions.

The mycelium, or root structure of the fungus, is used to create mycelium packaging. Mycelium forms a network of minuscule threads known as hyphae that may bind together different waste materials, including sawdust, maize stalks, and even old clothes, to form a strong, lightweight material that can be moulded into various shapes and sizes.

The sustainability of mycelium packaging is among its most important benefits. It is an environmentally beneficial substitute for conventional packaging materials since it is biodegradable, compostable, and can be made from waste materials. Instead of damaging the environment as Styrofoam does, mycelium packaging decomposes swiftly and provides nutrients back into the soil. For customers who place a high priority on sustainability, it can even be composted in a home compost bin, making it a fantastic choice. The adaptability of mycelium packaging is another benefit. Many things, such as electronics, furniture, and food, may be packaged using it. Moreover, it can be moulded into a variety of sizes and shapes, making it adjustable and able to meet the demands of numerous products. As a result, mycelium packaging may take the place of conventional packaging, reducing carbon emissions.

Mycelium packaging is already used by several businesses, including Ecovative, which creates mushroom-based packaging for businesses like Dell and IKEA. Other companies, like Evocative Design and MycoWorks, are looking into how mycelium could be used in home goods and building materials.

As more businesses use mycelium packaging, we may see a shift towards a more sustainable and circular economy, where there is less waste and resources are used more efficiently.

IMAGE CREDIT: https://unsplash.com/photos/EEuDMqRYbx0

The opportunity for creativity in mycelium packaging is one of its most fascinating features. Scientists and designers are looking at methods to improve the qualities of mycelium and develop new uses for it. For instance, scientists at the University of British Columbia have created a mycelium-based substance that can self-heal, making it perfect for use in goods that need to be long-lasting and durable. Mycelium is being used by another business, Mogu, to produce biodegradable soundproofing materials that can be applied to houses and structures.

Moreover, branding and marketing opportunities are exceptional with mycelium packaging. Businesses that use mycelium packaging may stand out from the crowd, enhance their brand reputation, and win over customers who care about the environment. This may assist companies in attracting and keeping clients that value sustainability. Businesses may also employ mycelium packaging to share their unique and environmentally friendly approach to packaging as a part of their sustainability narrative.

Since mycelium packaging is a novel technique, it stands to reason that there would be some issues. Cost is one of the key obstacles. Even if waste materials may be used to make mycelium packaging, the manufacturing process is still very costly when compared to conventional packaging materials. This could prevent startups or firms with thin profit margins from using it. Scalability issues with mycelium package manufacture present another difficulty. It is currently unclear if mycelium packaging can be manufactured at scale to fulfil the demands of smaller enterprises, even though firms like Ecovative have expanded their manufacturing to meet the needs of big organisations like Dell. To keep the price of mycelium packaging low, it may be necessary to improve how it is made.

The advantages of using mycelium packaging outweigh these difficulties. Mycelium packaging can drastically minimise the environmental impact of packaging by offering a flexible and sustainable replacement for conventional packaging materials. It also offers distinctive branding and marketing options. We can anticipate seeing even more creative applications and uses for this fascinating technology as more businesses choose to employ mycelium packaging, and research and development spending increases.

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BOOM! HERE'S A STRANGE ANIMAL FACT:

Pink flamingos do not exist. They are born grey, but the *canthaxanthin,* natural pink dye in their diet of brine shrimp and blue-green algae gives their feathers a pink hue.

IMAGE CREDIT:
https://unsplash.com/photos/rc362Xh-yGc

REDEFINING THE WORLD OF BIOLOGY WITH BIOSTATISTICS AND BIOINFORMATICS

SHUBHANGI SHARMA
B.Sc. (H) ZOOLOGY
BATCH: 2018-21

The term 'biology' has been associated with animals, their morphology and anatomy by many of us. However, in the last few decades, advances in mathematical methods and techniques in biology have been growing rapidly. With the advent of modern science, disciplines such as bioinformatics and statistical biology came into existence, to aid in effective interpretation of biological data. This explains the ever increasing demand of statisticians and mathematicians in the field of biology.

The motive behind the use of mathematical biology or bioinformatics is easy and efficient computational analysis using a variety of databases, servers and tools, to support meta-analysis. With just a click on your computer, you can now determine a molecular sequence, structure, function, evolutionary relationship with other organisms. NCBI (National Center for Biotechnology Information) is the most important component in computational research in biology since it is the home for public biomedical databases and software tools for analysing molecular and genomic data.

Programming is a core skill expected in modern biologists. Languages such as R and Python are becoming more and more popular amongst bioinformaticians. R mainly focuses on statistical data analysis whereas Python mostly deals with coding and software development. Being a biology student, I have done many projects that employed the use of bioinformatics in nearly all the disciplines, such as molecular biology, microbiology and proteomics to name a few. Everything from protein annotation and characterization to finding prospective drug targets for a pathogenic organism can be conveniently performed with the help of bioinformatics.

IMAGE CREDIT: https://unsplash.com/photos/ieic5Tq8YMk

Using statistical biology, confidence levels of our analyses results can be very conveniently deduced. The significance of the results obtained can be calculated on the basis of p-value (probability value). Non-parametric tests and parametric statistical tests such as t test, Chi-square test, z test, are employed to find out the significance of our experiments and test results.

For instance, Mendel's dihybrid test ratio is an excellent example of Chi-square test for goodness of fit. ANOVA (ANalysis Of VAriance) is a parametric test, which can be used to compare the means of 3 or more groups. In my lab, where we work primarily on reproductive biology and endocrinology of mice, we analyse most of the experimental data by one-way analysis of variance (ANOVA) followed by Newman–Keuls' multiple range test for comparison of group means. Results different from controls are considered significant at $p < 0.05$ and the data are expressed as mean ± S.E.M (Standard Error of Mean) values.

"Mathematics is biology's next microscope, only better;
Biology is mathematics' next physics, only better." - Joel Cohen

DOPAMINE: A BOON OR A BANE

NISHTHA BHATNAGAR
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I YEAR

Have you ever wondered why you felt a sudden rush of motivation?
Yes, you got it right, that is dopamine, often attributed as a pleasure chemical as it motivates you to do more; it can also make you do less.

Dopamine is a crucial neurotransmitter that the human body produces to facilitate the transmission of messages between nerve cells in the nervous system. The brain distributes it along four major pathways. Dopamine is synthesized in a two-step process wherein the amino acid tyrosine is first converted to dopa and then into dopamine. Its role in regulating emotions and behavior has been extensively studied, and it is linked to the feeling of pleasure and motivation, as well as our ability to plan and focus.

However, excessive amounts of dopamine can also be detrimental to our physical and mental health. Some drugs of abuse, such as opioids, cocaine, or nicotine, can cause dopamine to flood the reward pathway, leading to addiction. Although people experiencing addiction are not addicted to dopamine itself, a common misconception persists.

IMAGE CREDIT:
https://outsons.com/best-molecule-tattoo-ideas-you-have-to-see-to-believe/

Furthermore, both too much and too little dopamine can lead to mental disorders and challenges. Schizophrenia's positive symptoms, such as hallucinations and delusions, are associated with increased subcortical release of dopamine. Attention deficit hyperactivity disorder (ADHD) is linked to dopamine because people with ADHD struggle to maintain attention.

In addition, some physical disorders can result from issues with dopamine. Parkinson's disease, for example, is caused by the degeneration of nerve cells in the substantia nigra, which is responsible for controlling movement. As these nerve cells die or become impaired, they lose the ability to produce dopamine. Obese individuals have fewer dopamine receptors, which means they may have difficulty experiencing feelings of satisfaction and pleasure.

Nonetheless, dopamine can be life-saving in certain medical situations. Doctors may prescribe dopamine for low blood pressure, poor cardiac output, poor blood flow to vital organs, irregular heartbeat, faster heart rate, trouble breathing, chest pain, nausea and vomiting, headache, and some cases of septic shock.

In conclusion, dopamine is a crucial neurotransmitter that plays a vital role in regulating emotions and behavior. Although too much or too little dopamine can lead to physical and mental health problems, it can also be life-saving in certain medical situations. Overall, understanding the role of dopamine in our bodies can help us appreciate its importance and work towards maintaining its balance.

The mere mention of dopamine in the opening paragraph is enough to motivate readers to finish the article!

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BOOM! HERE ARE SOME STRANGE ANIMAL FACTS:

- The world's deadliest animal is the mosquito, which is far smaller than a shark, bear, or tiger. The World Health Organization has estimated that diseases spread by mosquitoes, such as malaria, dengue fever, and yellow fever, claim 725,000 lives annually.

- A vampire bat's bite might not even be felt due to its razor-sharp teeth. A bat may consume its victim's blood for up to 30 minutes since their saliva numbs any discomfort.

Compiled by:
SHIKSHA SIKARWAR, B.Sc.(H)ZOOLOGY, II YEAR

IMAGES:
https://unsplash.com/photos/80a3A_BFeic
https://commons.wikimedia.org/wiki/File:Common_vampire_bat,_Desmodus_rotundus.jpg

ASTROBIOLOGY AND TARDIGRADES IN SPACE RESEARCH

WAFA JAFRI
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I YEAR

When we talk about life in general, a lot of things comes to our mind, like human behaviour, plants, animals day-to-day society norms and what not, but it's not psychology it's astrobiology.

Astrobiology is the study of life in the universe, the search for existence of life, perhaps a unique life beyond earth which comes with the greater understanding of planetary systems and stellar interactions and study of the process involved. Today, astrobiology has evolved around the globe; it's a new research field, indeed with a bare minimum knowledge as on how the field works to most of the people but when you look through a greater insight, it's something worth giving you goosebumps.

Meanwhile, astrobiologists all around the globe have a great interest in a tiny extremophile called as *Tardigrada* (water bear) because there is no denial that these are one of the toughest animals on our planet earth with a size varying from 0.05 to 1.2 mm long.

IMAGE CREDIT: https://eos.org/articles/even-tardigrades-will-feel-the-heat-of-climate-change

They inhabit a vast majority in earth's environment and are important in the field of zoology as well; they can be found in our backyard; having been discovered in 1773, they belong to Phylum Invertebrata, Supertype Articulata.

Tardigrades caused scientists to consider them in the context of space research due to their enormous resistance to radiation. At the same time studies focused on the phenomenon of 'Cryptobiosis' revealed the capacity of this amazing animal to many unfavourable factors encountered, becoming a suitable model for astrobiological studies for their ability to dehydrate, extreme temperatures tolerance and radiation resistance.

It is said that these animals have very unique genetic material and proteins which are not found in any other animal or organism on earth till date, making scientists believe they have a foreign DNA because of which can be genetically engineered with human sample of DNA and proteins, and can help humans increase their tolerance level. Even the tests had been conducted and it turned out that if tardigrade and human DNA & proteins are combined, human cell had increased it's X-ray tolerance for radiation to approx. 500 times and heat tolerance as well.

So, maybe if it could be worked on a larger scale astronauts wouldn't be needing heat shields and other radiation protective measures in the outer space and they can be less vulnerable to harsh cosmic conditions. Let's see where our research will lead us to, and what we are doing right now, will definitely lead us to extreme levels of experimental research success.

IMAGE CREDIT: https://unsplash.com/photos/Q1p7bh3SHj8

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BOOM! HERE'S A STRANGE ANIMAL FACT:

The nest made by American catfishes contains eggs that are suspended in a mass of bubbles and mucus produced by the male.

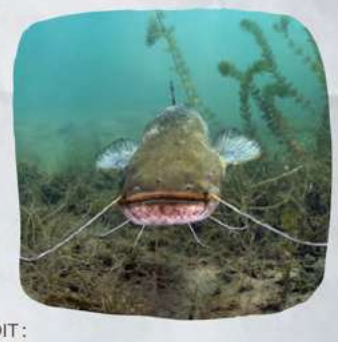

IMAGE CREDIT :
https://unsplash.com/photos/uWLvruHp8kY

Compiled by:
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ERA OF DECEPTION

SPRIHA GODBOLE
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I YEAR

Antibiotics are considered to be one of the miracles of modern medicine by scientists. By the term antibiotic we literally mean to say something that is against life, i.e., Anti- "Against" and Bios- "Life". The first bacteria to be discovered were rod shaped and helped in shaping the future. Sir Alexander Fleming's Nobel prize-winning discovery led to medicines that fought some of the deadliest diseases in the world and have given birth to plethora of new opportunities. With the advent of DNA sequencing, it is helping us in discovering antibiotics we never knew bacteria could produce.

According to the WHO report, Mongolia had the highest consumption of antibiotics. Diseases like gonorrhoea and pneumonia were once readily cured but overuse of antibiotics has created bacteria that are resistant to even last-resort medicines.

Common side effects of antibiotics include diarrhoea. The United Nations recently held an unprecedented conference on how to combat this microbe. Since, a bacterium tends to fight with the antibiotics by making itself resistant from them, new researches are taking place in the laboratories to find even more powerful antibiotics. The antibiotics are further classified in different classes like bactericidal and bacteriostatic and have long been studied by scientists to bring a radical change in this field.

I personally feel that being a much debated topic, nothing more has been cited by the scientists in this area. Antibiotics, on one hand, have paved the path for newer discoveries, but on the other hand, they have also posed greater risks on humanity. With newer age technologies, we are moving towards a more delusional era where everything's either trying to become a reality or slowly coming to an end.

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IMAGE CREDIT:
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THE AVIAN BLOG

HIMANI CHOUDHARY
B.Sc. LIFE SCIENCE
I YEAR

Not only do the pearly cascades of the moist obstruct, they also hide. They imprison within them the most regal of creatures, the most wonderful of views and the most serene of feelings. And as they rise up, they unravel these hermetically packaged little mysteries to the world to behold. Here are some alluring birds and let us just appreciate the beauty of nature.

THE INDIGENOUS PITTA

This bird has striking hues; thus, it makes sense that its native name means 'nine colours'. Despite having a fairly small tail, this bird nonetheless migrates. According to what I have observed, a bird's tail is crucial for landing, turning, and control. Nevertheless, despite having such a tiny tail, this bird is able to fly great distances. This colourful bird's primary colour is green, and its underbelly is beige with a white throat. The face has a black crown stripe and an eye mask with a white inside. The beak is somewhat thick and can be anything from peachy pink to completely black. They have shoulder patches in a vivid turquoise. Three different tones of blue are multicoloured on the short tail. The middle of the tail is navy blue, the tip is marine blue, and the higher portion is aqua. A vivid red patch covers the under tail and continues to the belly. Girls and boys are comparable. It makes noises at the first sign of day and at night, as if to say good morning and good night. At the moment, it generally whistles twice, although it has the ability to mimic other birds, particularly raptors, in its warning sounds. And here's another little-known fact: the bird's aqua patches may be displayed or concealed at will.

THREATS:

Loss of habitat poses a serious concern to this bird since it prefers deciduous woodlands with undergrowth and leaf litter. Leaf litter is frequently removed for aesthetic reasons, or worse, burned. Looks are important in today's society. Another well-known truth about Pittas is that powerful city lights have a negative impact on their migration. The birds become disoriented and land in the incorrect locations. This conduct resembles that of European puffins.

IMAGE CREDIT: https://unsplash.com/photos/DVaO6WKRXIE

THE OUTSTANDING PIED KINGFISHER

These birds are members of the kingfisher family, as their name implies. They have a pointed all black beak and have a white underside with black and white spots that give them a speckled appearance. Black and white stripes alternate across the face. The tail has a white border and is once more varyingly black. The upper band is wider and shaped like a gorget. Two black stripes, one joins the back and the other links the eye stripe to the necklace at the shoulder. Their crests are both sharp. Black defines the legs. When viewed from above or even below, the white patch on the wing is vividly apparent while the bird is in flight. It circles the lake for some time looking for the best place to capture fish. When it is finished, envelops it and begins to float above the water. The bird now stands motionless for a brief period of time, like a frozen picture. The body oscillates repeatedly up and down like a see-saw while the tail fanning out and the wings are the only parts of the bird that are moving. The bird immediately jumps into the water from head first. Emerges from the water in a flash, carrying its catch in its beak, and flies off to a safe perch.

THREATS:

The major threat is undoubtedly biodiversity loss. Every day number of trees are cut down and our natural ecosystem is being destroyed to satisfy human needs.

IMAGE CREDIT:
https://unsplash.com/photos/LVtxv4cS2JQ

IMAGE CREDIT:
https://unsplash.com/photos/o1Ey3q_FIJM

THE RESISTANT BARN OWL

Similar to our superheroes, this bird awakens when the rest of the world is asleep to hunt out dark forces like rats and mice that make us scream at the sight of them and become anxious. The Owl and the Cloud: It was late at night when I noticed our barn owl perching in a nearby structure. It suddenly began to thunder. The barn owl noticed a heavy cloud in the sky when he looked up. He shrieked out loudly in response, as though thinking, "Oh, here comes another dark power; I can take it on." After a little period of peace, the ominous cloud began tormenting once more. Barney howled back at us. Over the course of the following 30 minutes, this occurred multiple times. Barney, though, took the initiative and screamed first. The cloud suddenly gave up in defeat and started sobbing, as if it had had enough. The dark one disappeared, and the tears were large. Our tenacious owl triumphed. Barn owls and humans: As I previously stated, they battle evil powers and are also our closest allies. But occasionally, they terrify us as people. Some people think of them as ghosts, while other times their screech frightens us. I have personal experience with these occurrences. Please take a look, though; does it strike you as frightening?

THREATS:

Even though barn owls, like all owls in India, have a nearly global range, trapping and hunting pose a threat to them. Us, birdwatchers, are another concern since we unintentionally rouse them from their hiding spots in order to take attractive pictures. However, it puts the bird in danger. The common birds in the area, including crows, drongos, and mynas, regularly assault owls, endangering their lives. So, in the event that this occurs, it is our responsibility as birders to make sure that they are safely returned to their hiding places.

IMAGE CREDIT:
https://unsplash.com/photos/TkQjNx6qCTA

"Birds are a miracle because they prove us there is a finer, simpler state of being which we may strive to attain." - Douglas Coupland

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HOW COOL IS OUR FAUNA!

YASHIKA SHARMA
B.Sc.(H)ZOOLOGY
II YEAR

Being students, many of us are quite interested in knowing about all the vertebrates that exist in different corners of the world, right? Out of these, animals exhibiting truly remarkable, bizarre and unusual features attract quite a lot of attention. So, here are some of the cool and strange animals...

STICK INSECT:

They are found in tropical and sub-tropical habitats & these amazing insects are hard to spot as they look so much like twigs but these twigs can walk and prey! These stick insects can regenerate limbs & can reproduce without the help of males by a process called parthenogenesis. There are a few species of these insects for which the scientists haven't found males. They are not venomous but defend themselves by ejecting a nasty substance to put a bad taste in the mouth of their predators. They can play dead when all other defence mechanisms fail. This behaviour is called thanatosis.

IMAGE CREDIT:
https://unsplash.com/photos/FGo_TxJ8O38

IMAGE CREDIT:
https://www.reddit.com/r/NatureIsFuckingLit/comments/b4bozv/a_pod_of_narwhal_in_the_arctic/?utm_source=share&utm_medium=ios_app

NARWHAL:

These strange & beautiful creatures are said to be as "Unicorns of the Sea" because of the long tusk that is protruding from their heads & this name perfectly suits them, right? They spend their lives in the Arctic waters of Canada, Greenland, Norway and Russia. These creatures change colour as they age! Newborns are blue-grey, juveniles are blue-black and adults are a mottled grey. Old narwhals are nearly all white in colour. The narwhal tusk is most commonly found on the males and it is actually an enlarged tooth with sensory proficiency and up to 10 million nerve endings inside it! Some narwhals have up to two tusks, while others have none. The spiralled tusk juts from the head and it can grow as long at 10 feet!

VENEZUELAN POODLE MOTH:

The Venezuelan poodle moth is an as-yet unidentified species of moth that was photographed in 2009 by the zoologist, Dr. Arthur Anker, in the Gran Sabana region of Venezuela. Anker named it so because of its resemblance to a poodle. Due to its strange appearance and lack of information accesible, it is being compared to famous animal hoaxes. This moth was not spotted again in this region after this!

IMAGE CREDIT:
https://commons.wikimedia.org/wiki/File:Poodle_Moth.jpg

IMAGE CREDIT:
https://commons.wikimedia.org/wiki/File:Leafy_Sea_Dragon.jpg

LEAFY SEA DRAGON:

Doesn't its appearance looks like many leaf-like protrusions are coming out from all over its body? Well, these protrusions are not used for the motion of this creature, they serve only as camouflage. These leaf-like appendages & their pectoral fins together create an illusion of looking like some floating seaweed, thus protecting the animal! The animal quietly approaches its prey who is totally oblivious to its presence due to the spectacular camouflage ability it exhibits. Populations of this unique creature have been declining due to the pollution that is severely affecting their habitat causing habitat destruction and due to aquarium harvest. Doesn't it look like some mythical creature?

SATANIC LEAF-TAILED GECKO:

The satanic leaf-tailed gecko is one of the smallest leaf-tailed gecko species. It has a horned head, red eyes and a tail with notches that help it mimic the look of decaying leaves! These animals have amazing camouflage abilities thus making them the master of disguise. They are nocturnal and insectivorous. They can scream when they are threatened and are the most vocal of all the lizards. They can easily climb the trees due to the adhesive scales present on their toes.

IMAGE CREDIT:
https://commons.wikimedia.org/wiki/File:Satanic_leaf-tailed_gecko_%28Uroplatus_phantasticus%29_Ranomafana_2.jpg

So, aren't these creatures beautiful and unique?? We as human beings should respect all such wonderful creatures and not over-harvest them for what makes them unique because once all the animals will vanish from the earth, the human-race will disappear too!

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IT IS YOU....

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II YEAR

THE YEAR 2023

'Hi, Welcome back to another episode of Humanity Index with Mr X. Your guy is here to once again open the knots of the spine-chilling stories of terror and oppression by humans a.k.a us. From raping animals to killing street dogs, Humanity Index in India has dropped to an all-time low of 20%. The news regarding the torment faced by the bulls as well as the harm caused to the humans during the Jallikattu event is once again being debated. Is this the dawn of a new 'Veganism' era or just another sin in the long pile of human history? It looks like the shadows of this inhumane monster will soon engulf the entire population with its long, sharp claws.'
Has the daunting prophecy of the future been written? Shall we start the countdown?

THE YEAR 2028

'Hi, Welcome back to another episode of Humanity Index with Mr X. Your guy is here to once again open the knots of the spine-chilling stories of terror and oppression by humans a.k.a us. From raping animals to the mass killing of street dogs, Humanity Index in India has dropped to an all-time low of 20%. The torment faced by the bulls as well as the harm caused to the humans during the Jallikattu event is once again being debated. While many of the other sports displaying scenes of animal cruelty were banned or sorted, Jallikattu is still practised with great zeal. At this bull-taming festival, many incidents of serious injuries to the bulls and cases of torture are reported post the ritual.'

The question of 'Who gave us the right to tame and torture other species?' remains unanswered. Traditions that are not broken when necessary, merely serve as a drag on our progress. Even history teaches us similar lessons. Had we never grown out of the sati or pardha system, would we have ever evolved today? Then why the cry for help of these innocent creatures always falls on deaf ears?

It is incidents like these which blur the line between ritual and torture, but we cannot always run away from the ominous reality, can we?

Our laws have not discriminated against any creature. Multiple animal protection laws have been laid down but we remembered only our fundamental rights and forget to act upon our fundamental duties.

IMAGE CREDIT: https://unsplash.com/photos/tIfrzHxhPYQ

According to part IV A of the constitution, every citizen has to improve the natural environment under article 51A(g).

Under Section 428 of the Indian Penal Code, 1860, a person is liable to punishment including a fine or imprisonment for 2 years or both if he kills or maims any animal/ animals worth rupees 10 or upwards.

Under Section 429 of the Indian Penal Code, 1860, a person is liable to punishment including a fine or imprisonment for 5 years or both if he kills or maims any animal/ animals worth rupees 50 or upwards.

Have we lost all fear and respect for the constitution? Is this what the history of our motherland teaches us? Will the shadows of this inhumane monster engulf the entire population with its long, sharp claws?

SDG 14 aims at using marine resources sustainably while SDG 15 aims at promoting the sustainable use of terrestrial ecosystems and preventing biodiversity loss. But are these goals only the duty of government? We as citizens only carry out illegal fisheries, hunting, and torturing of animals just to fancy our capricious minds.....'

A podcast I would never like to tune into.

What crime do you think will happen next? Are you going to make this podcast a reality?

REFERENCES-
https://blog.ipleaders.in/instances-animal-cruelty-india/#Indian_Penal_Code_1860

SOPHIA AND HER SALTY SKIN!

DR. JASPREET KAUR
ASSISTANT PROFESSOR
ZOOLOGY DEPARTMENT
MAITREYI COLLEGE

It was dark in the evening after sunset. The sky was filled with bright orange light. Sophia was sitting on a bench near the beach with her feet resting on soft sand. She was coughing and sneezing at regular spurts. Her health had been on the downside for the last couple of weeks and was facing difficulty while breathing also. She was thinking about her upcoming school project show for which she had been rehearsing for over a week now. *'Sophia'*, a loud voice came over and she turned back instantly. It was her uncle who was returning from the clinic. Her uncle, Dr. Watson was a famous physician in the town. He brought some blueberries for Sophia. The two sat together and started talking for a while. *'You are looking pale, Sophia ... Did you have your medicines today?' 'Yes, I did... Uncle Watson, but the coughing doesn't seem to get over.' 'Never mind, my child, it will all be over soon'*, Dr. Watson said while giving a soft pat on Sophia's head. *'Tell me, uncle, what were you saying to Papa last night?' 'Oh, that's nothing; it was something about the banner posted near the bank... Now, let's get back home, it's already too dark here...'*

Dr. Watson dropped Sophia to her home. Sophia's father greeted Dr. Watson and offered him a drink. The two sat on the table in the living room by the firewood and started talking. *'We still got a chance, Dr. Watson said to Sophia's father, David...' 'Do you really think it's going to work this time, Watson?'* David said. His voice was filled with hope and despair at the same time. Sophia was going upstairs to her room but stood by the wall in the corner to overhear the tale of two gentlemen in the living room. *'Yes, it is, if we are able to replace the mutant copy with a wild one, we stand a bright chance'*, Dr. Watson said to David. Sophia was intrigued to know more about the 'mutant' and 'wild' copy, what are they talking about, she asked herself.

Next morning, Sophia was getting ready for school and suddenly she started coughing aggressively. Her mother, Annie came to her rescue and took her to her bedroom and lay on her bed. Sophia was adamant to go to school for the rehearsals but her mother consoled her to take an off today and get some rest. Sophia was helpless in this situation as she wanted to go but her body was not allowing doing so. Her mother left the room to bring some warm water for her. Sophia had been feeling restless since last night when he had heard about the conversation between her dad and her uncle, Dr. Watson. She started searching for the key words she had heard last night on the internet and was getting all sorts of random information. After a while, her eyes got tired and she fell asleep.

'Hi, Sophie, I am CFTR...' wondering what that is... Sophia was surprised with her eyes wide open... She could not believe as to whom she was talking... *'Hello, Sophie, are you here?'* CFTR said. *'Yes, yes, I am here'*, Sophia said hurriedly and with amazement to whom she was actually talking.

"Well, I reside in the long arm of your chromosome no. 7 and my address is q31.2. I wonder if you are not feeling quite well these days, are you?' 'Yes, yes', Sophia responded by nodding her head in dismay... *'Well, I am sorry about that, it's all because of me, you know.... One of the amino acids, phenylalanine doesn't appear at position 508 every time my protein sequence is formed. Scientists call this the 'delta 508' mutation.'* Sophia was scratching her head and was trying her best to understand what was all being said. *'But don't you worry,'* CFTR continued, *'if doctors can replace me with a fresh new perfectly functioning gene, you will be better soon... You should not lose hope, you must have heard about Ashanti D'silva...don't you'*... Sophia gave a negative response. *'Well, you must Google her... she was also cured with a wild copy'* While Sophia was trying to understand what's going on, a loud barking of her pet dog Silvas awoke her... Was I dreaming, to whom I was talking to...? Sophia immediately got up from her bed and started sweating profusely. While she was wiping off her sweat with her hands, she accidentally licked her index finger, it was salty... why is my sweat too salty, she asked herself... She came downstairs hurriedly and asked her dad about what Dr. Watson was talking about last night. She enquired about the mutant and wild copy.

David escorted her to her room and promised her to tell everything in detail. He called Dr. Watson over to the house. The trio sat in Sophia's room with the computer screen turned on. Dr. Watson started explaining about Sophia's condition. He told her that because her CFTR (cystic fibrosis trans membrane conductance regulator) gene is faulty, her airways were clogged and that was the reason for her constant coughing. So, if the faulty gene can be replaced by a normal (wild copy) of the gene, she can start living a normal life again. Sophia was hearing everything in a relaxed state and was filled with hope.

The next morning, Sophia was feeling much better. She had her breakfast of scrambled eggs and went off to school on her bike. She was feeling different today, feeling much positive that her health will be better soon and she would be enjoying what all she had been missing. As she entered the class, Mrs. Winchester, her science teacher, smiled at her and asked about her well-being. Then she happily sat on her bench close to her friend Alice. Mrs. Winchester, the science teacher, asked all students about the cell transporters. Then, she gave examples by pointing towards the figure of a sodium ion transporter on the projection screen. While Sophia was searching for her notebook in bag, she suddenly heard CFTR. Sophia was startled and immediately looked at Mrs. Winchester. She had heard this name in her dream last night. She listened with utmost attention, where Mrs. Winchester was talking about CFTR in sweat glands. She explained that if the CFTR gene becomes faulty, the chloride ions cannot

be reabsorbed back into the body from outside of skin. Also, a faulty CFTR channel inhibits sodium ion channels and thus sodium ions are also not able to enter from outside to inside of skin cells. So, these two ions combine and make sodium chloride, which makes the skin salty of patients suffering from cystic fibrosis (due to mutant CFTR). Oh, so, that's why my sweat was so salty, Sophia said in her mind. Now, all the conversation she had with her father and Dr. Watson about her illness started making some sense.

She returned home and her mother gave her the good news that her gene therapy trials will start next week. She was filled with happiness and hope. So, after all the preparations, Dr. Watson informed Sophia's parents about her admission date in hospital. On reaching the hospital, Sophia looked here and there with some patients in wheelchairs taken carefully by the hospital staff, doctors in their white coats and nurses with their well-ironed uniform. Sophia and her parents were shown the way to their room and were accompanied by Dr. Watson. It was a small room with a window on one side. The doctors had to run a battery of tests before starting the actual therapy to ensure that Sophia's health was in complete order and receptive for the trials. She tried overhearing the conversation of doctors who were constantly monitoring her condition. She was thinking all this would end soon and she can get back to her home and enjoy her school and rehearsals for the project show. Sometimes, Sophia used to hear cries from nearby cabins and the alarms of ambulances often used to startle her in the middle of nights. When she woke, she started writing her diary placed on the nearby table by the window....

Fragrance of flowers on a gloomy day,
A sprinkle of smile in dark times,
Innocence laughter makes your day

Seems to be lost these days,
Searching for hope and brightness
Amidst the sirens and alarms
Looking for a music of soul
To get back to track every day

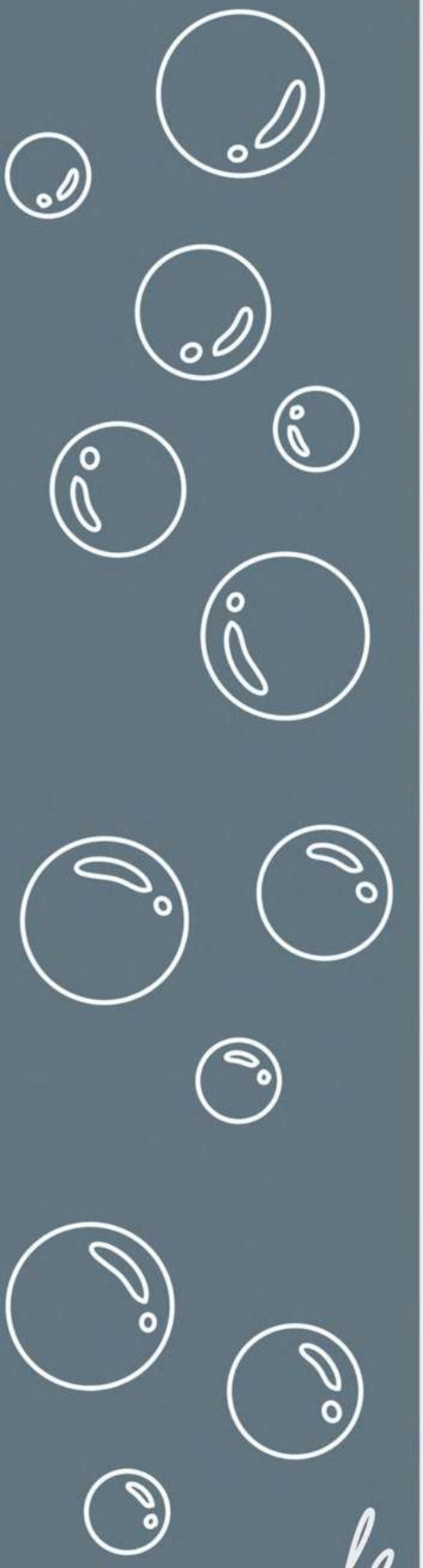
Amidst all noise and chit-chat
Reading a novel in my space
To get solace each day

It's hard staying strong,
For it looks so easy all day long
Getting tangled in chains of sorrow
Yet breaking them again tomorrow
To get peace every day

Clouds of despair arrive soon,
The brightening smile fades soon
Yet, Spirit of goodness prevails
Alacrity of spirit must return
To get geared up for the day

Prayers seem to be answered each day
With hands folded in hope
Eyes shutting the darkness around
To get bright sunshine every day

IMAGE CREDIT: https://unsplash.com/photos/GcrSgHDrniY



from the HE(ART)

DIGITAL ARTWORK ON "LIFE IN WATER"

VAISHNAVI RAJAGOPALAN
B.Sc. (H) ZOOLOGY
II YEAR

GLITTERING BEETLE

INTO THE WOODS

KASHISH KUMARI
B.Sc. LIFE SCIENCE
II YEAR

BAWL OF THE EARTH

JYOTI JHA
B.Sc. (H) ZOOLOGY
III YEAR

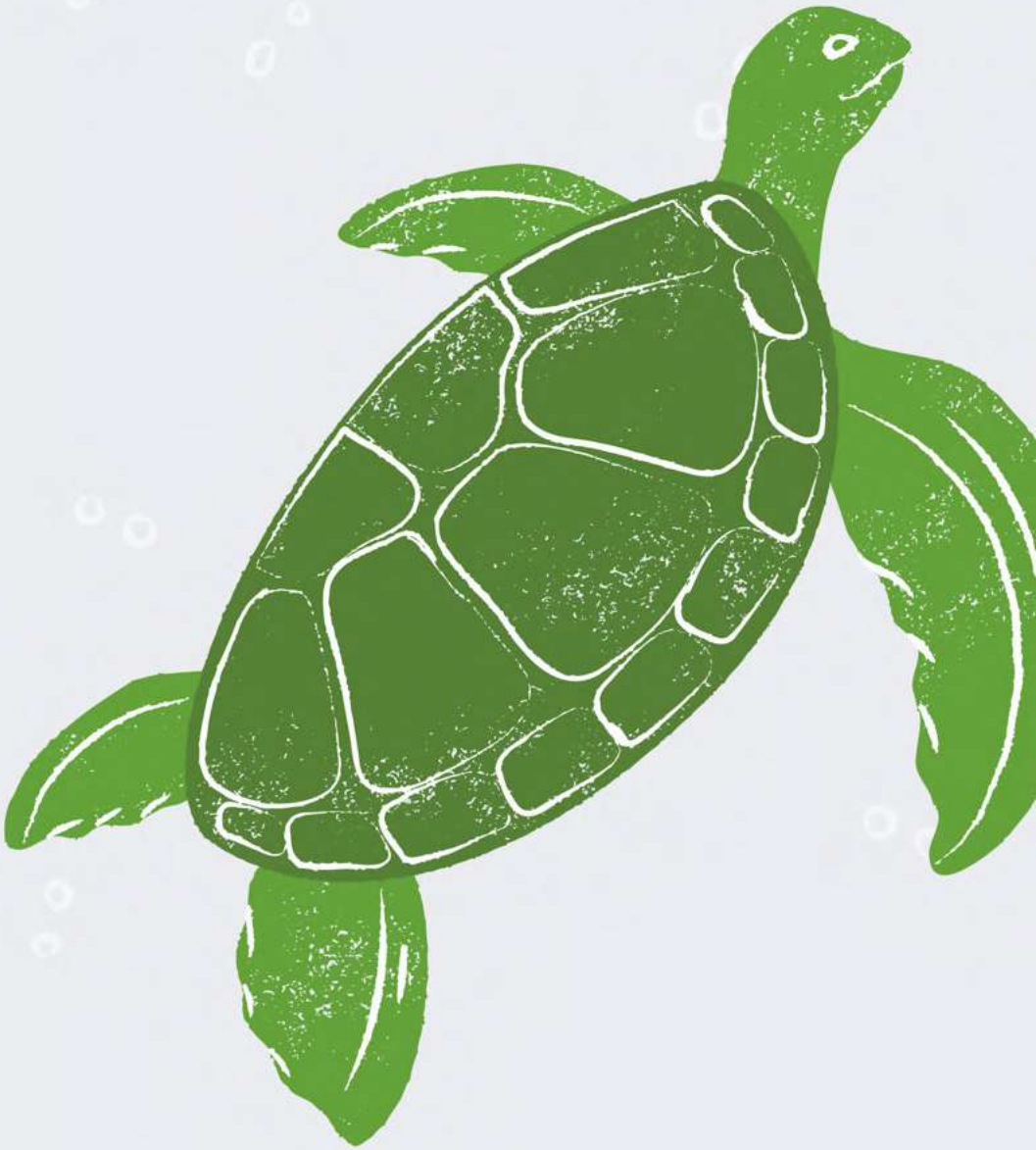
UNISON OF COLOURS

KASHISH KUMARI
B.Sc. LIFE SCIENCE
II YEAR

AMIDST THE COCONUT TREES

GUNJAN YADAV
B.Sc. (H) ZOOLOGY
III YEAR

IRIDESCENCE
2022-23



The land of VERSES

HADES' HYMN- AN ODE TO PERSEPHONE, GODDESS OF SPRING

Flowers upon flowers pass through her hands,
as she breathes in the song of life into them;
they say her touch was akin to the kiss of sunlight.

I envy the daisies and daffodils strewn across her lap-
A black lily, my heart was, shrivelled into a stony little bud.
Her, otherworldly and divine,
And I, the monger of the Underworld.

And so,
I watch from afar.
The wind of Maytime rustles leaves hither and thither; and in the commotion
her eyes meet mine,
and I blossom.

Her tender yet potent gaze lit up all my hellish corners-
The crème-de-la-crème of Olympus showcased strength by waging wars, but she?
She waged a war against the doom of death, even the death in me.

She smiles at her feat accomplished,
and I feel little green leaves unfurling and growing in my heart,
taking root amidst all the chaos.
For the first time in eons, I felt alive.

It's as though my veins branched further into the darkest of my depths,
only to murmur a fervent prayer in her name.

"Persephone?"
Her face turns red like the rhododendrons and roses woven around her wrists.
"Yes?"

"You, you make me bloom.
My petals- they're at your mercy."

IMAGE CREDIT: PRASHANSA
B.Sc. (H) ZOOLOGY
III YEAR

PRASHANSA
B.Sc. (H) ZOOLOGY
III YEAR

HOW CAN I LOVE YOU IF YOU DON'T LOVE THEM?

You pluck them to give me... and I plant them to give life...
You say you don't care how they're grown... and I want to see them shine...
You've been told that they are just beautiful... whereas I saw them changing from seed to plant...
How can I just love you if you don't love them at all!??

They say you have very pretty eyes but I've never seen them for those petals...
Those petals which fill life in an empty soul... can't they just see you?
You gave me a bouquet of all those dead souls whereas I just wanted them to be growing there in their homes.
How can I love you if you don't have a soul for them???

You hit that little life when we're walking through the park... and when I saved him you just laughed...
Saying they are just little dogs who have no lifes...
You made all those creatures a waste which are the divine sons of gods.
You never saw their eyes which have different stories... you only admired the humans who are never by their side.
And when I told you to love them... I just gave excuses to them all...
How can I just love you dear when you don't love them at all!!???

They too have mercy for others but you don't have...
You kill them for fun when for you they starve themselves for life...
You never understood them but they gave you their heart...
Could you just let them live even when they don't need anything from you all???

If not then how can i??
How can I love you humans???
When you don't love nature at all!??

IMAGE CREDIT: VERSHA AGGARWAL
B.Sc. (H) ZOOLOGY
III YEAR

BAGMITA BISWAS
B.Sc. LIFE SCIENCE
III YEAR

DEVELOPING CONCEPTUS

Descendants of parents,
Union of gonads,
Metamorphosis the form of conceptus,
Expanding to become foetus,
Cherishing in the endometrium,
Homo sapiens SUCCEED HARDEST JOB,
Portraying out of womb to Nature's home,
Descendant evolving to change the environment!

Heaped creeped to reach puberty,
Confused for career orientation,
Entangled in relationships,
Cryptic human tied the knot,
Replicating with the human soul,
Descendant subtitled with ancestor,
Establishing his gene pool,
Descendant disrupt the nature's balance

Accelerating destruction of nature,
Criminal activity countered,
Natural selection hitted Homo sapiens
Descendant genes reduced to half,
Polluted and unsustainable environment
GUILLOTINED THE species 'Homo sapiens '

TIYA CHIKARA
B.Sc. (H) ZOOLOGY
III YEAR

एक धरा सुहानी ऐसी हो

एक धरा सहुानी ऐसी हो
जहां वर्षा भी मोती जैसी हो
ना हो वनों को कटने का भय, ना खेतों को उर्वरता खोने का
जहां नदीयां कल कल बहती हो, गगन भी गंगा जैसी हो
जहां चिड़िया भी सरगम गाती हो,
एक धरा सुहानी ऐसी हो
जहां वर्षा भी मोती जैसी हो
जहां न हो बाढ़, भूकंप, सूखे का खतरा
ना कोई महामारी हो
जहां पेड़ लदे हों फल फुलो से, हर घर एक फुलवारी हो,
एक धरा सुहानी ऐसी हो
जहां वर्षा भी मोती जैसी हो।
ना हो दूषित हवा जहां, निर्मल नीर निर्झर हो
एक धरा सुहानी ऐसी हो
जहां वर्षा भी मोती जैसी हो,
जहां पशु पक्षियों को प्रेम मिले, न हत्या का भय हो
जहां नर नारायण जैसा और नारी नारायणी जैसी हो
एक धरा सहानी ऐसी हो
जहां वर्षा भी मोती जैसी हो

IMAGE CREDIT: AMINIKA
B.Sc. (H) ZOOLOGY
BATCH: 2019-22

JYOTI JHA
B.Sc.(H) ZOOLOGY
III YEAR

DREAMY NUCLEUS

Nucleus का मन गुनगुनाता रहा
Cytoplasm से पल-पल बतियाता रहा
DNA RNA सोचते रहे
ना समझे ना जाने
ये *Nucleus*... जाने कैसे ख्वाब सजाता रहा

कभी *Replication* करा देता
कभी *Transcription* करा देता
कभी रास्ते बंद कर देता
कभी सकपका के खोल देता
Protein के *molecules* को पुकारता रहा
उमीदों के *ribonuclear particles* बनाता रहा
ये *Nucleus*... जाने कैसे ख्वाब सजाता रहा

Nucleolus की भी... उलझनें थीं ये कैसी
Nucleus में समां के
DNA, RNA, Protein... सभी से अनबन हो कोई जैसी
कभी *5.8S, 18S, 28S* जोड़ता
कभी *5S* की तलाश करता
Ribosome बनाने की जुस्तज़ू जगाता रहा
ख्वाइशें थीं उसकी *Protein* सी चहकती
दूर कहीं से जैसे... सभी *RNA* को पुकारता रहा
ये *Nucleus*... जाने कैसे ख्वाब सजाता रहा

NPC... खुले *channels* से आशियाँ बसाने लगा
RNA, Ribosome, Protein की आंधियाँ चलाने लगा
DNase RNase भी आए और
हो गया सब कुछ धुआं धुआं... जाने क्यों फिर भी
Nucleus... कोई ख्वाब सजाता रहा... सजाता रहा

DR. RENU GUPTA
PROFESSOR
ZOOLOGY DEPARTMENT
MAITREYI COLLEGE

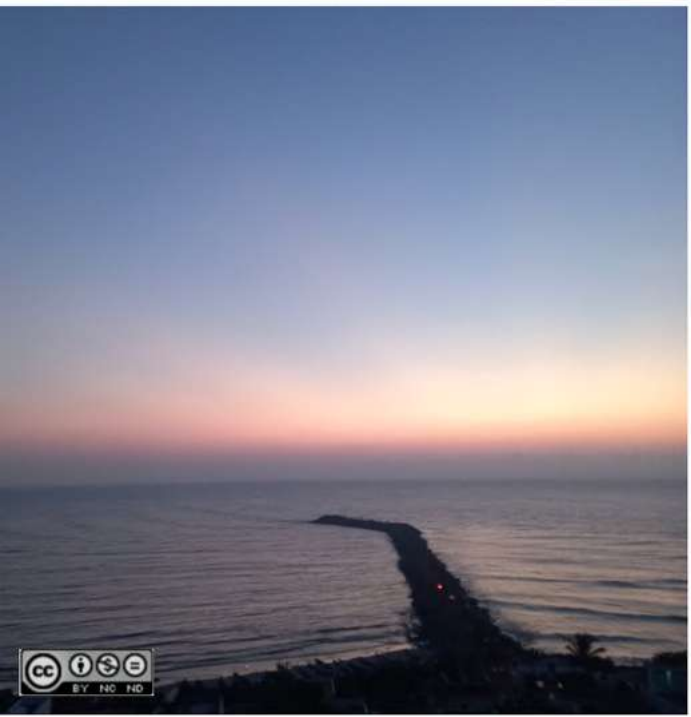
TRAVEL -O-GRAM

'THE GOLDEN ORANGE RAYS SETTING IN, THE CHILLY WARM WIND TAKING OVER I WAS IN THE LAP OF GOD'S PARADISE AND NOTHING COULD EXCITE ME MORE!'

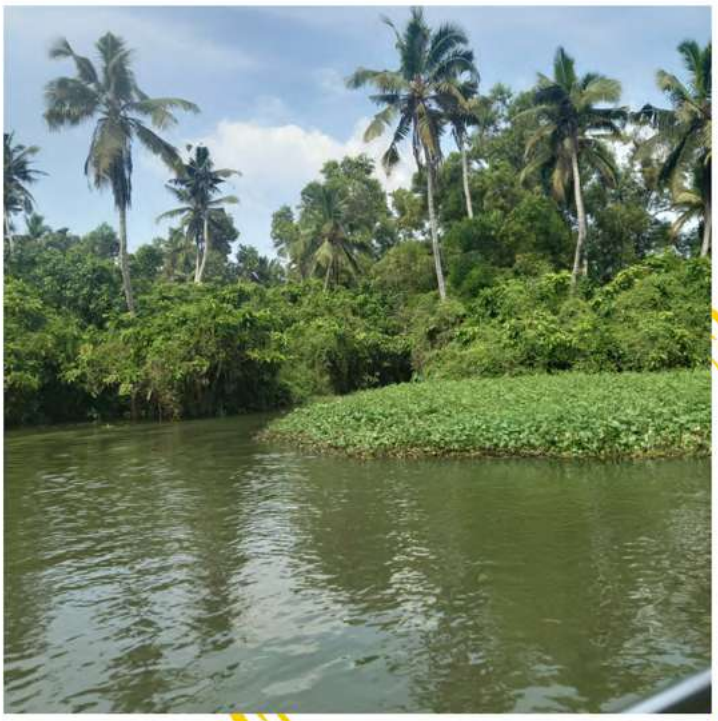
A TRIP TO HEAVEN

CHAHAK RAWAT
B.Sc. LIFE SCIENCE
II YEAR

On 28th Dec 2022 just after my exam, I took a flight to Trivandrum with my family. No, the best part of the flight was not the meal, but slowly watching the sunset and the clouds turning orange. After landing, we had dinner and rested a bit at the hotel to gear up for what lay ahead.



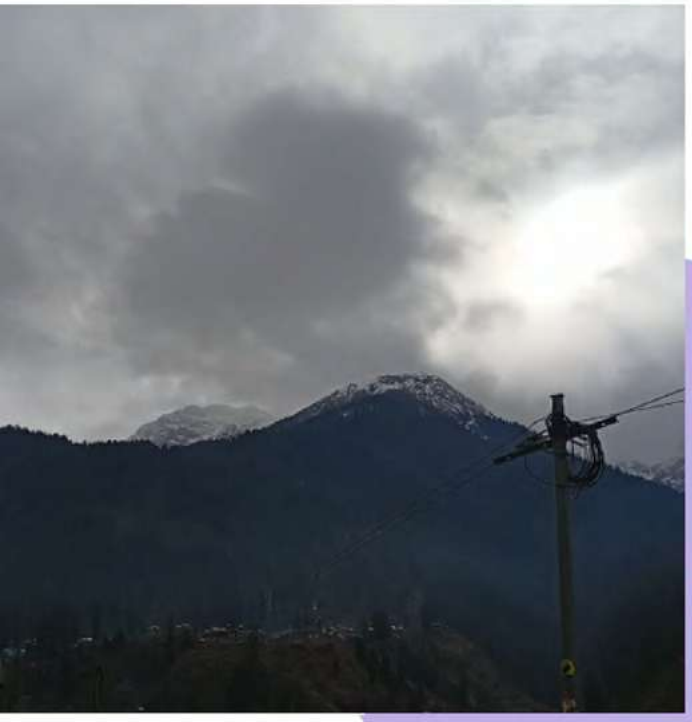
Our next day included exploring the beaches, one of which was the Kovalam beach. The sun was at its peak and we could see the water waves glistening under the rays. After spending our day at the beach and relishing the authentic food, we visited the nearby lighthouse and which undoubtedly offered a surreal view of the whole beach. The strong windy air touching my body calmed my entire senses. I think that you too must experience this feeling at least once in your life as just words can't do justice to it.

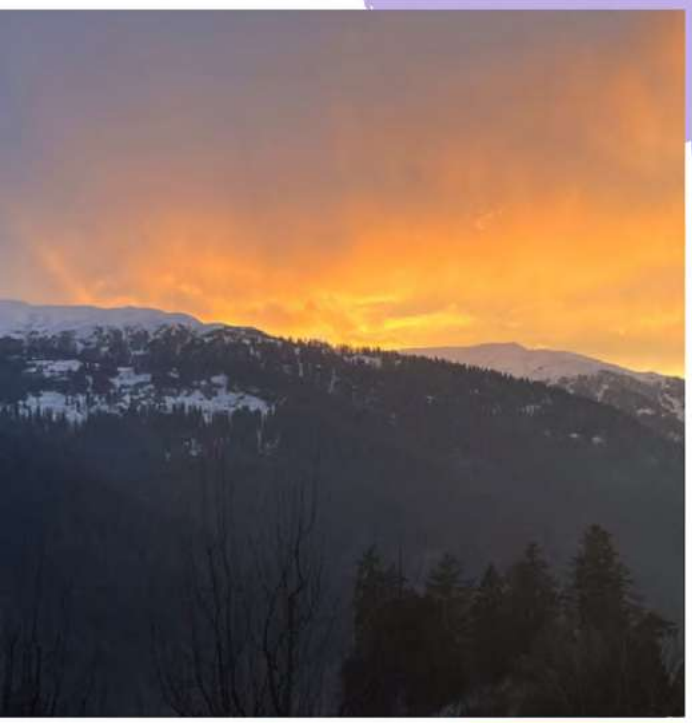


The next morning, we took a three-hour train journey to Kanyakumari. We first visited the Vivekananda Rock Memorial via ferry. Situated on a rock island, the memorial revealed Vivekananda's statue, Guru Ramakrishna's statue, and their journey. Our third day ended with exploring the memorial and having authentic South Indian food on banana leaves. The next day we woke up super early in the morning to catch the sunrise together. Our itinerary of the day included visiting Bhagwati Mata Mandir followed by the Vattakotai Fort. The most unique feature as most people say is a view of the sea from one side and the Western Ghats on another. After exploring the whole fort we returned to Trivandrum via train.

1st January 2023 marked our last day in Kerala as well as the first day in 2023. With nothing but happiness on our faces and positivity in our hearts we visited the Padmanabhaswamy Temple. There were 3 lines, the first line was for free entry, the second was for Rs 50, and the third was for VIP Entry (Rs 500 per person). We went ahead with the second option. By the way, did I tell you that both males and females must wear a dhoti to enter the premises? The area revealed a very unique design of Vishnu Ji's statue. There were 3 gates and each gate revealed three different parts. First the head, then the abdomen, and then the feet. After sending our ardent prayers, we took the Prasad (Kheer and gud) and went for a little stroll. We also tried backward boating in Poovar where the entire surrounding was covered with Mangroves. I felt like a child trying to peek through window blinds as I tried to move my gaze as far as I could to see what lay beyond those intertwined trees. We did a little shopping near the island and bought beautiful seashell jewellery.

As every good thing has an ending, we too took a train back to Delhi that night. But I was contented because the ending was a happy and safe one.





KHEER GANGA- A HEAVENLY DESTINATION

SWAROOPA SAXENA
B.Sc. LIFE SCIENCE
III YEAR

A mind preoccupied with various exhausting thoughts, I decided to experience the beauty of nature and spend some quality time with myself. I wanted to explore the beauty of Parvati Valley and hence decided to visit Kasol and the action-packed Kheer Ganga trek. Located in the Kullu district of himachal pradesh, Parvati Valley starts above Bhunter where the Parvati River meets the river Beas and goes eastwards all the way up to Mantalai Lake, which is the source of Parvati River. The trip was a pleasant shock to my biological clock since the chilly mornings in Kasol with -19°C was a lovely sight to behold. We reached Kullu by 7 in the morning and decided to have breakfast since the overnight journey was a sort of guilty pleasure for all the passengers on the bus.

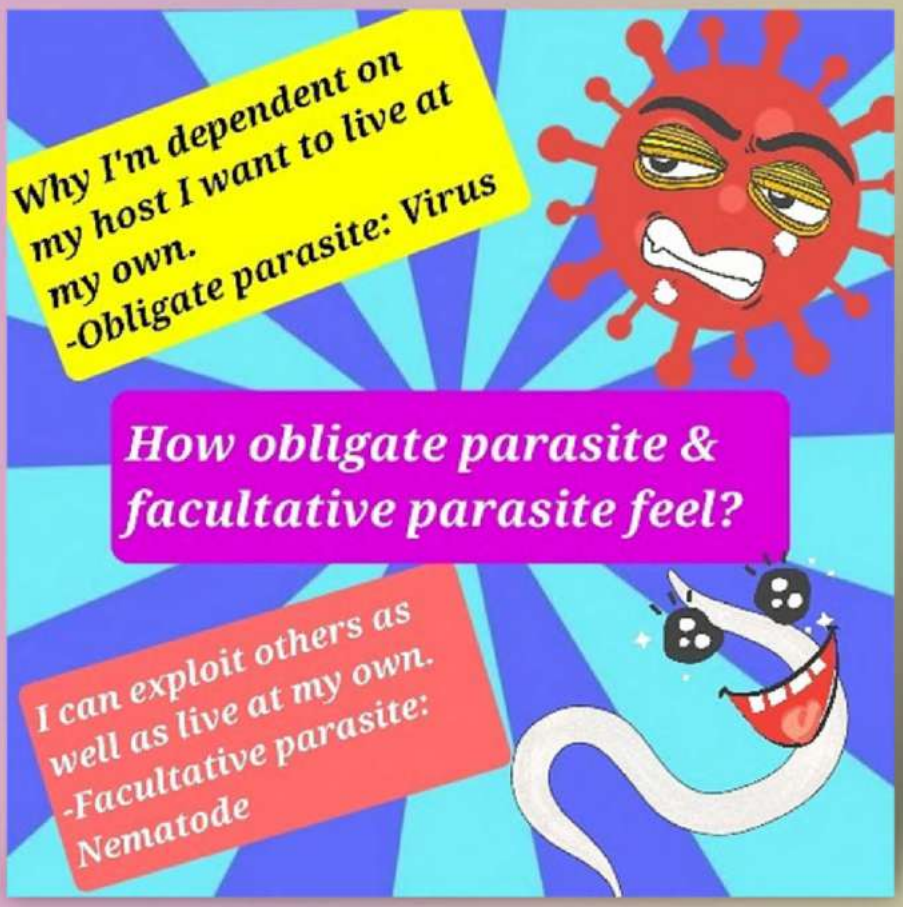
Then we took a bus to Kalga village, and the way to the beautiful little village was no less than heaven. The first day was all about our eyes witnessing the beauty of Kalga – the thunderous Parvati River, the lush mountains, and the scenic town. There are galleries, windows, and chairs, and if you wield your pen, the moments and the aura here can help you create masterpieces. In the evening hours, we decided to visit the nearby waterfall, which was frozen due to the chilly weather conditions. It was a suitably maddening trek of around an hour, with the tiny hamlets in close vicinity. After getting back to our stay at the Kalga village, the land of stunning serenity amidst apple orchards, it was time for a bonfire, which is now an absolute ritual whenever you visit any hill station.

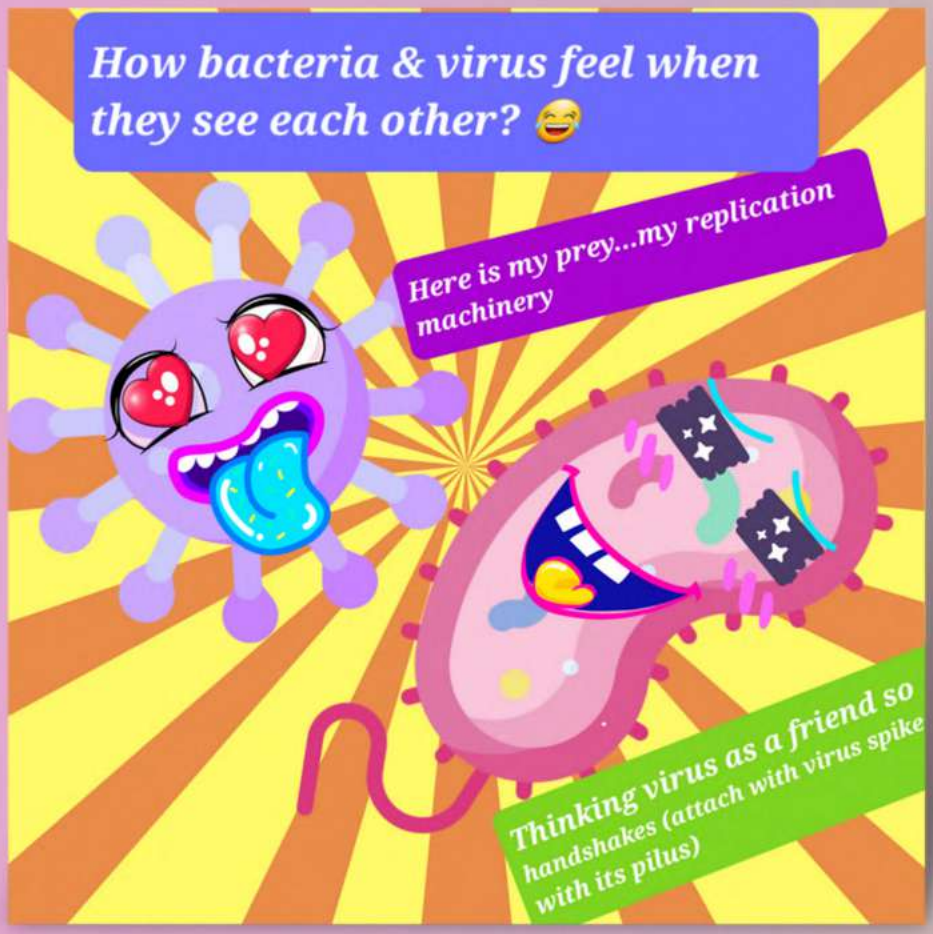
The warm aura of the bonfire matched the warmth present inside our hearts at that point in time. Dining areas and rooms were pre-installed with tandoor and sealed windows for warmth. The spell bounding views from the glass panes and the calmness inside the room guaranteed a much-needed break from the tiring journey. We spent the night comfortably and relished the delicious home-cooked food. The next morning, we head towards Barshaini to rent all the basic equipment required for trekking such as snow boots, and support, and to have a hearty breakfast before we begin the trek. With the sun at its full charm, we decided to start our trek at 10 from Barshaini, a prosperous village of Kullu. Trek to Kheer Ganga offers excellent meadows, forested ways with pine trees, crystal clear waterfalls, fresh air, tranquil surroundings, snow-capped mountains, hot springs, and a splendid view of the Himalayas. After a rough climb through the charismatic gray-green mountains along with the thunderous Parvati River, reaching the top, you find yourself in the abode of lord Shiva. Yes, the description is all about the land full of mesmerizing passages as its glory, the Kheer Ganga trek. Undoubtedly, the views of the eye-catching and colorful villages will mesmerize you while you will be on their trekking trails. Beginning from curvy and rocky paths, through bridges there to behold, with some sadness and warnings, the walk had to go on. While the roads cautioned, the rustic charm and the scenic vistas were luring and so was the joy of being close to nature. Amidst everything, river Parvati conspired us to keep going and the charm didn't cease at any point in time. Even through the tricky passages, I didn't lose hope, since I had promises to keep. Amidst this heaven at Kheer Ganga, there are several cafes and a natural hot spring - the Parvati Kund, to enjoy and comfort oneself.

This Kheer Ganga trek left me with a million memories to cherish and a lot to ponder on, and a comforting group of friends that I would always like to keep close to my heart.

JESTS AND MORE

LOVE





BIAS

KHUSHI PRAJAPATI
B.Sc. (H) ZOOLOGY
II YEAR

REFERENCE-
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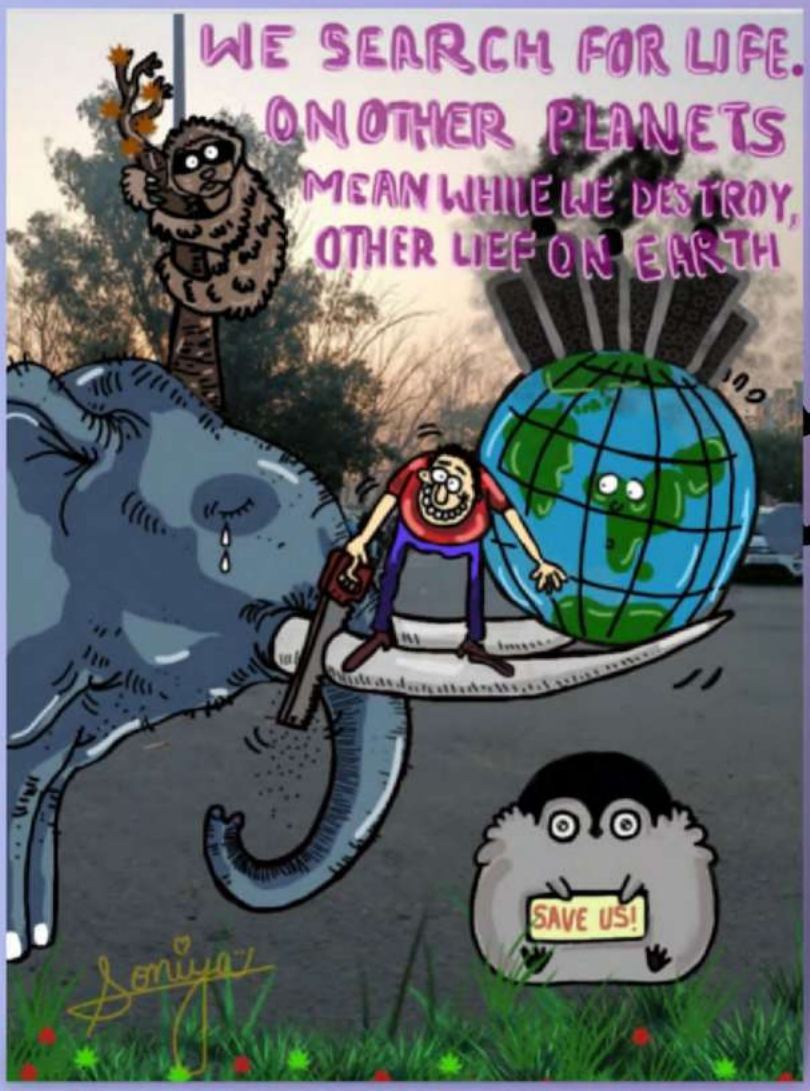

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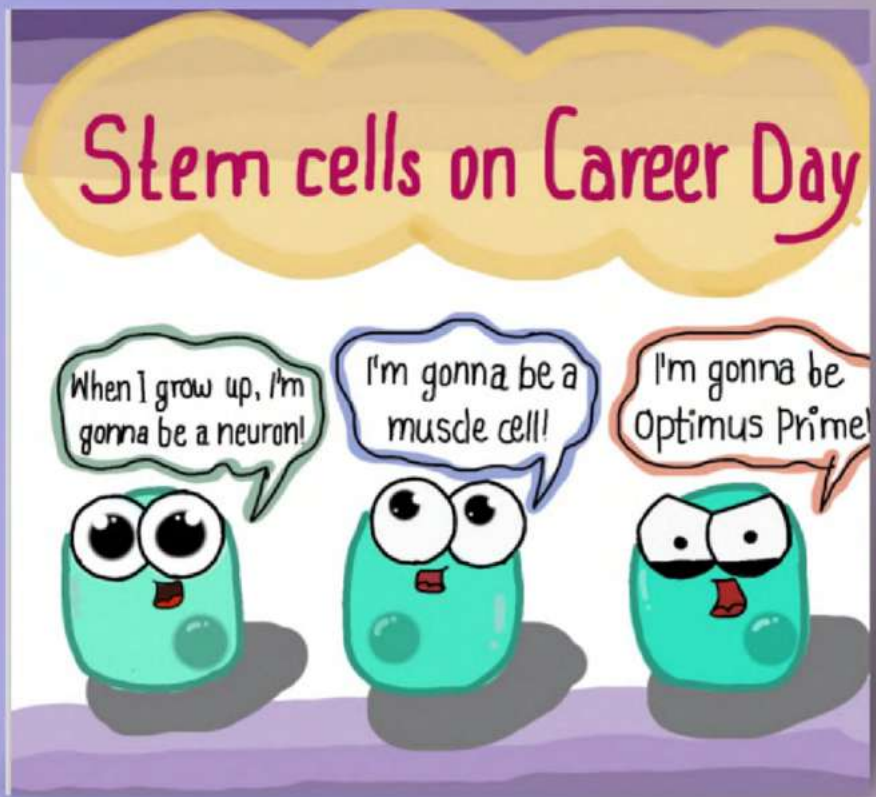

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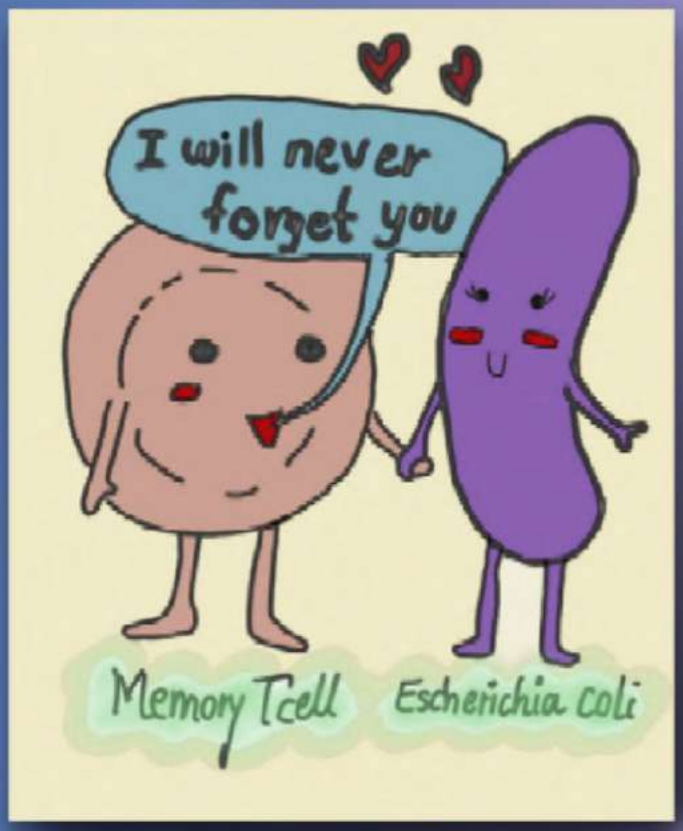
SONIYA BAGHEL
B.Sc. (H) ZOOLOGY
II YEAR



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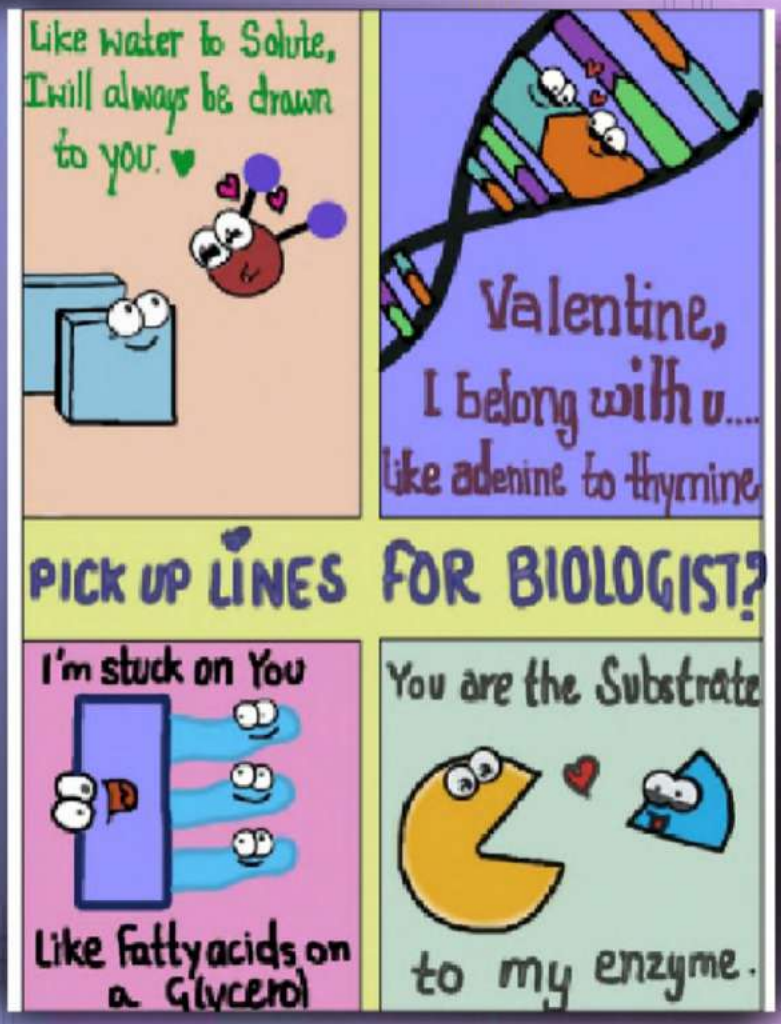

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https://pin.it/7kjbgM3

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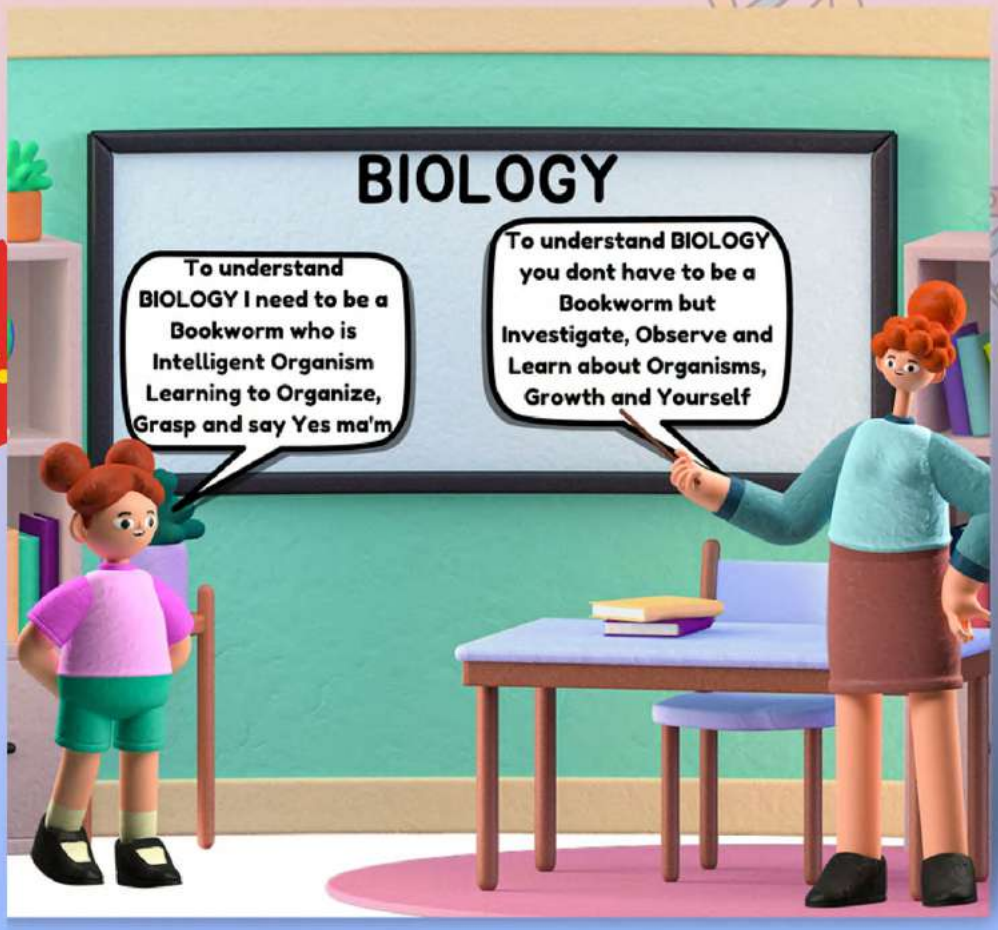
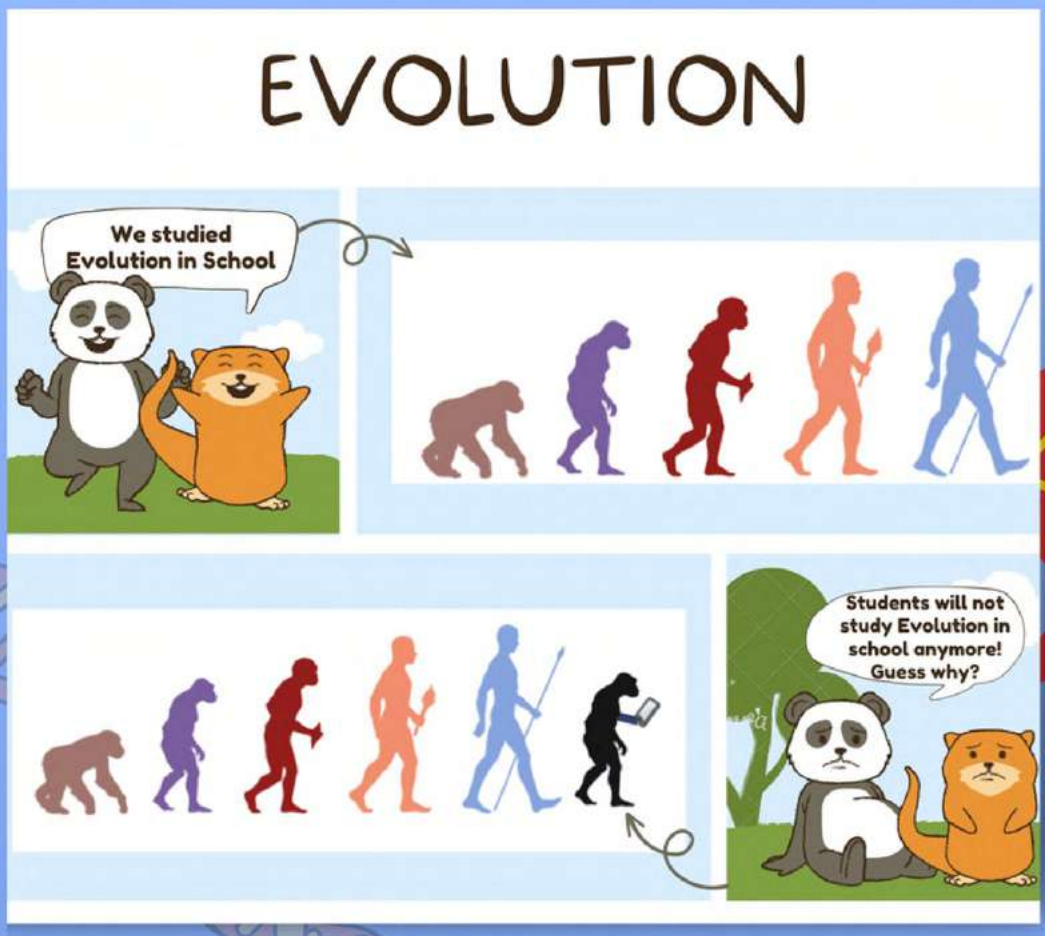
II YEAR

KEWL!





BRAVO

DR. RENU GUPTA
PROFESSOR
ZOOLOGY DEPARTMENT
MAITREYI COLLEGE

WHO AM I ?

Round and rolling up' circle of life
Making many of my copies alike
Starting from the origin of my life

Different forms on the gel
As I diffuse out of the well
Travelling with my bands up high
Reaching at the opposite end

I am yet to reveal myself
Find me out by staining the gel
Orange hues sparking glow
Stacking between and giving a show

How much weight I carry around
Easy to find out with a ladder down
Here comes my real size
Big or small is what can be found

You can chop me as you want
Just need to know some letters around
A, T, G, C and scissors to use
Sticky ends floating around
Leave me aside for a short jaunt

As u come back, 'm all torn
Use me for a purpose for which I am born
Chopped bands different size
As I come out of disguise

Can you find out who I am?

DR. JASPREET KAUR
ASSISTANT PROFESSOR
ZOOLOGY DEPARTMENT
MAITREYI COLLEGE

WHO AM I ?

Facing two sides of a wall
I am all hollow amongst all
Carrying the small molecule along
I make people healthy and strong

Perfect shape looking normal
Change my surroundings, I look abnormal
Swollen like a full balloon
Bursting out 'm doomed

Spiky shrinking all along
Dying with things gone wrong
Ghosts of my body float around
But traces of me can be found

My favorite color is surely red
U can watch out if you bled
U need to keep my numbers high
Else you will be pale and may also die

Living a short life one twenty days
Dying and living is all part of game
Find out who I am ?

DR. JASPREET KAUR
ASSISTANT PROFESSOR
ZOOLOGY DEPARTMENT
MAITREYI COLLEGE

ILLUSTRATIONS

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.

BARBARA MCCLINTOCK

AMERICAN SCIENTIST & CYTOGENECIST

A lot of characteristics of organisms are determined by heredity - that is, by their genes. Barbara McClintock studied corn's hereditary characteristics and connected them to chromosomal alterations in plants. During the 1940s and 1950s she proved that genetic elements can sometimes change position on a chromosome.

YOSHINORI OHSUMI

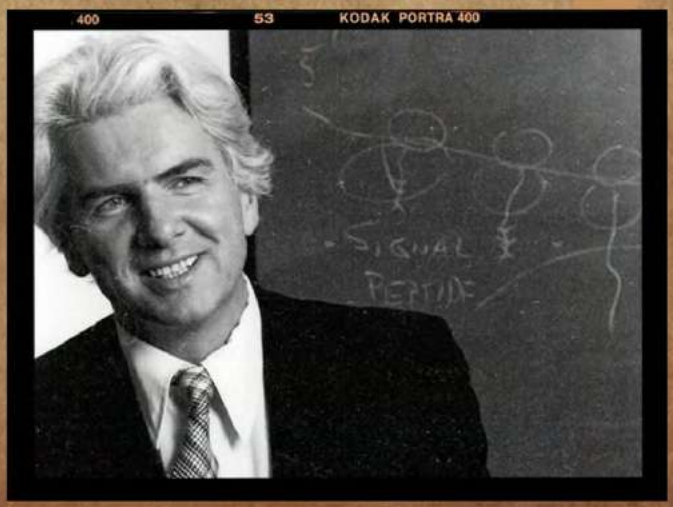
JAPANESE CELL BIOLOGIST

Yoshinori Ohsumi's discoveries paved the way for a better understanding of cells' ability to cope with malnutrition and infection. The concept of autophagy emerged during the 1960s, as it was observed by scientists that the cell engulfs its contents.

GUNTER BLOBEL

CELL & MOLECULAR BIOLOGIST

Scientists have discovered that newly generated proteins have an intrinsic signal that is required for guiding them to and across the membrane of a cell. Dr Günter Blobel's work has also aided in the development of a more efficient method of using cells as "protein factories" for the synthesis of essential drugs.



SVANTE PAABO
SWEDISH GENETICIST

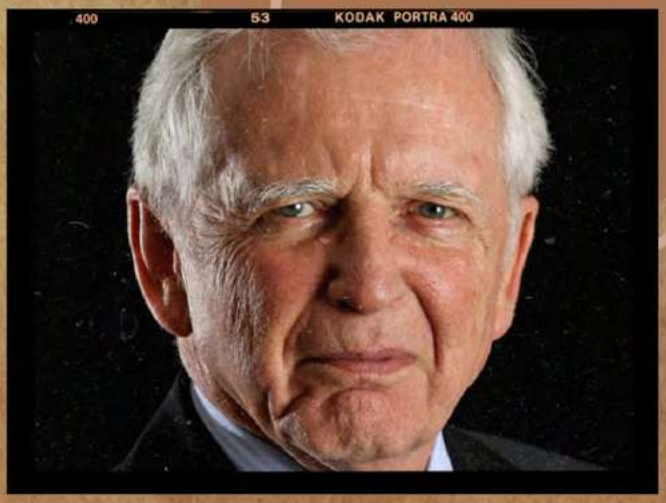
Svante Pääbo was successful in sequencing the Neanderthal genome in 2010. He also found Denisova, a previously unidentified hominid. The migration out of Africa some 70,000 years ago resulted in gene transfer from these now extinct hominins to Homo sapiens, he discovered. In 2022, he received the Nobel prize for his discoveries concerning the genomes of extinct hominins and human evolution.

TU YOUYOU
CHINESE CHEMIST & MALIOLOGIST

Tu Youyou concentrated on sweet wormwood in the 1970s after researching conventional herbal remedies and was successful in isolating a compound called artemisinin that suppresses the malaria parasite. Millions of people's lives and health have been saved and improved thanks to drugs based on artemisinin. In 2015, she received Nobel prize for her discoveries concerning a novel therapy against Malaria.

HARALD ZUR HAUSEN
GERMAN BIOLOGIST

Harald zur Hausen discovered in 1983 that certain papilloma viruses (wart viruses), whose genes are incorporated into the DNA of the host cells, are responsible for cervical cancer in humans. Cervical cancer, the second most frequent tumour illness in women, could now be prevented thanks to this research. In 2008, he received Nobel prize for his discovery of human papilloma viruses causing cervical cancer.



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https://www.nobelprize.org/

Compiled by:
DEEPIKA WADHWA, B.Sc.(H) ZOOLOGY, III YEAR
SURAYANSHI ANAND, B.Sc.(H) ZOOLOGY, II YEAR

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.

ADITI PANT
INDIAN OCEANOGRAPHER

Aditi Pant was born and brought up in Bengali family in Nagpur. First woman to go on an expedition in Antarctica. Honoured with the Antarctica Award by the government of India for her contributions to the Indian Antarctic programme

VIDITA VAIDYA
INDIAN NEUROSCIENTIST

Vidita Vaidya is a Neuroscientist and Professor at the Tata Institute of Fundamental Research, Mumbai. Her primary areas of research focus on neuroscience and molecular psychiatry. She has been awarded with the 2015 Shanti Swarup Bhatnagar Prize for Science and Technology in Medical Sciences.

RITU KARIDHAL
INDIAN SCIENTIST AT ISRO

Born and brought up in Lucknow, Dr. Ritu Karidhal Srivastava is an aerospace engineer. She has worked for ISRO since 1997 and played a key role in the development of Mangalyaan. The Chandrayaan-2 mission was also supervised by her and driven to her execution

BIBHA CHOWDHURI
INDIAN PHYSICIST

Bibha Chowdhuri was an Indian physicist, from Kolkata. She analyzed cosmic rays and particle physics. After receiving her PhD from the University of Manchester, she worked at the Tata Institute of Fundamental Research. She examined groups of half-tone Ilford plates that had been exposed to cosmic rays at various altitudes. She observed that the decays were curved, which was probably caused by particle multiple scattering. The yellow-white dwarf star HD 86081 in the constellation Sextans, which is south of the celestial equator, has been renamed Bibha in her honor by the IAU.

DARSHAN RANGANATHAN
INDIAN ORGANIC CHEMIST

Darshan Ranganathan was an Indian organic chemist, well-known for her work in bio-organic chemistry, including "pioneering work in protein folding." Additionally, she received recognition for her work in "supramolecular assemblies, molecular design, chemical simulation of key biological processes, synthesis of functional hybrid peptides, and synthesis of nanotubes." She earned Ph.D. in chemistry from Delhi University. She was awarded an 1851 Research Fellowship by the Royal Commission for the Exhibition of 1851, which allowed her to engage in postdoctoral research with Professor D.H.R. Barton at Imperial College London.

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https://www.buzzfeed.com/sumedha_bharpilania/14-indian-women-in-science-you-should-know-about

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TIYA CHIKARA & DEEPIKA WADHWA
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Model Systems in Biology

PART II

(This is part two 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 short generation time, easily available/ bred under laboratory conditions, well-characterized genome and/or similarity to human beings, in order to study certain biological phenomena with the aim to provide insight into other organisms.

Caenorhabditis elegans

- Development of body plan, and nervous system
- Cell lineage mapping
- Control of cell death, aging and behavior
- Gene regulation
- Cell proliferation and cancer genes

1960's
3.5 days
300 offsrings (self)
>1000 offsrings (cross)
1mm long
97Mb; ~19000 genes

Drosophila melanogaster

- Genetics and inheritance
- Development of body plan, nervous system, heart and musculature
- Control cell polarization
- Cellular morphogenesis
- Genetic control of behavior, cell death and aging
- Regenerative biology and drug discovery

1901
~12 days
~400 eggs
3mm long
180Mb; ~13000 genes

Danio rerio

- Development of body tissues
- Formation of nervous system
- Study of neurodevelopmental disorders and other birth defects
- Human diseases and drug discovery
  - Toxicology studies

1970's
~2-4 months
200-300 eggs/week
~3-5cm long
~1400Mb; ~26000 genes

MODEL SYSTEMS

Xenopus laevis

- Early vertebrate development and patterning
- Spinal cord development and regeneration
- Cell cycle regulation
- Nuclear transport

1950's
~1-2 years
500-1000 eggs/ spawning
6cm (male); 10cm (female)
~3100Mb; ~50000 genes

Arabidopsis thaliana

- Development and patterning of tissues
- Plant interactions with environment including pathogens
- Circadian biology
- Genetics, physiology, gene regulation

1980's
~6 weeks
~20-25cm tall
~5000 seeds
~135Mb; ~27500 genes

Mus musculus

- Development of body tissues
- Immune system function
- Gene regulation and inheritance
- Adaptive evolution
- Cancer & other human diseases

1900's
~10 weeks
10-12/ litter
~15-20cm long
2500Mb; ~25000 genes

Color key:

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

Compiled by:
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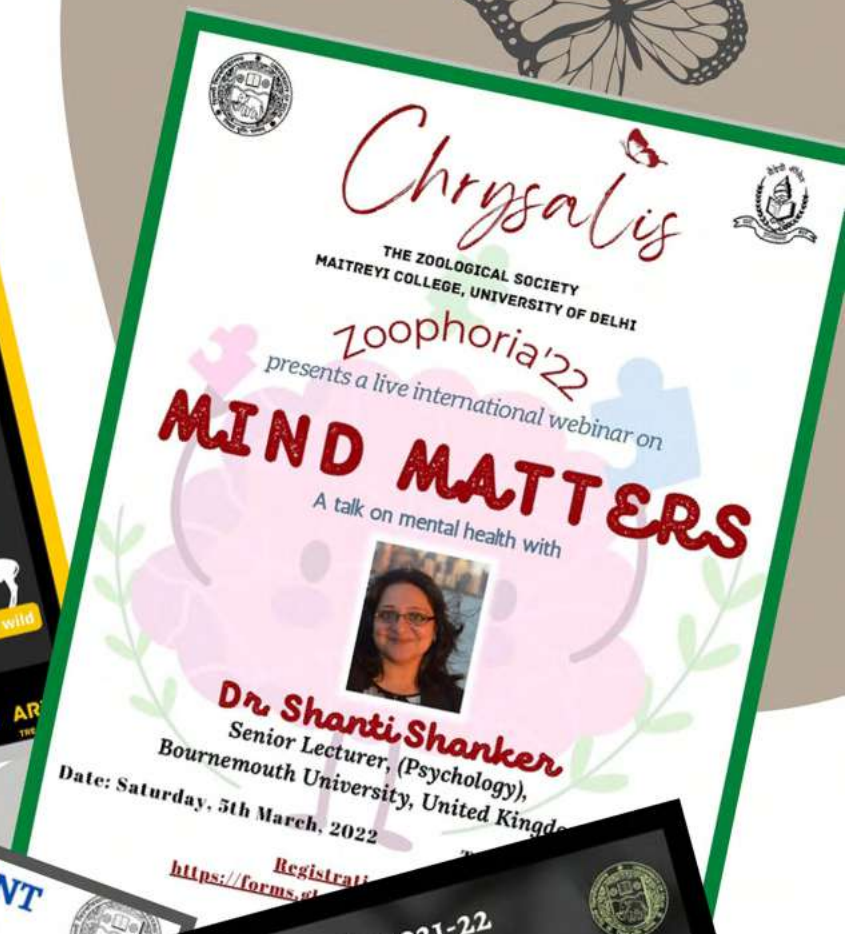
MAITREYI COLLEGE

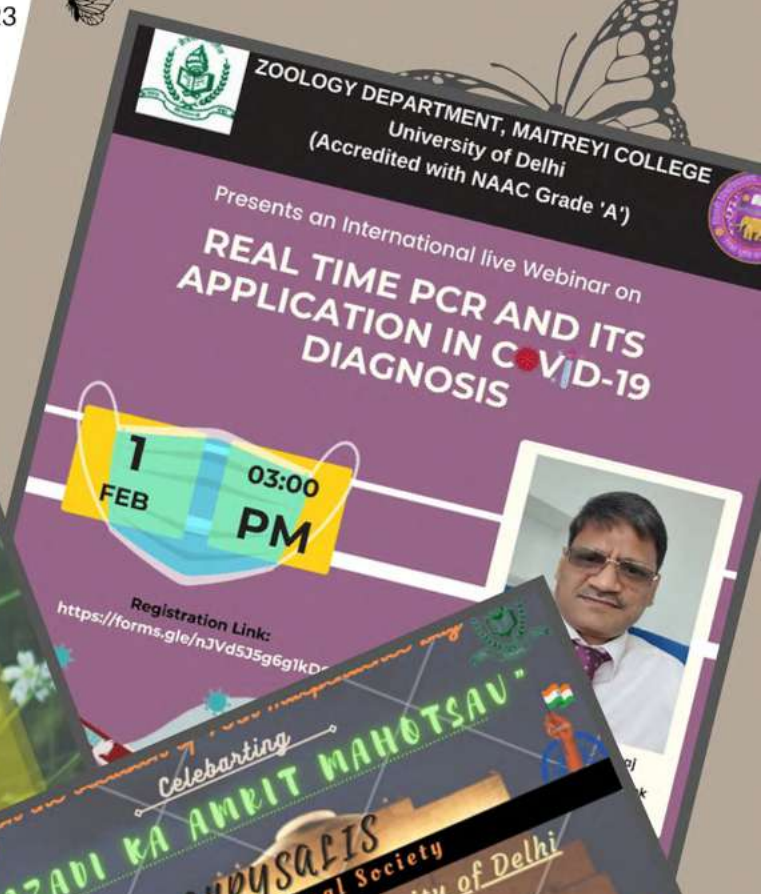
(Look for Part III in next issue.)

YEAR 2021-22 AT A GLANCE

Zoology Department: 2021-22

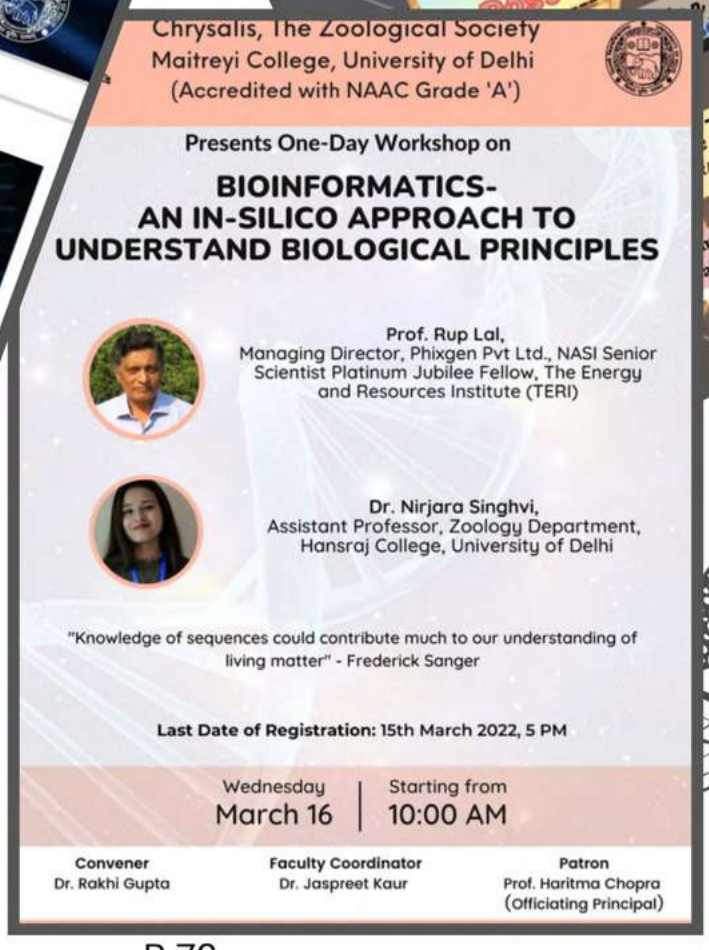



University of Delhi
ZOOLOGY DEPARTMENT
is organizing a
5-DAY NATIONAL WORKSHOP FOR SCHOOL STUDENTS
on
BIOLOGY MADE EASY USING COMPUTERS
DATE :- 1 - 5 September, 2021
TIME:- 3:30 pm-5:30 pm
PLATFORM :- Zoom App & Google Classroom
ELIGIBILITY:- Students of Science Stream
PREREQUISITES:-Laptop/Smartphone with internet


ZOOLOGY DEPARTMENT, MAITREYI COLLEGE
University of Delhi
(Accredited with NAAC Grade 'A')
Presents an International live Webinar on
REAL TIME PCR AND ITS APPLICATION IN COVID-19 DIAGNOSIS
1 FEB
03:00 PM
Registration Link:


Celebrating
"AZADI KA AMRIT MAHOTSAV"
CHRYSALIS
The Zoological Society
Maitreyi College,University of Delhi
Presents
Innovative Artistry- A Poster Making Contest
On the theme
Evolution of science post Independence


Maitreyi College
ACCREDITED WITH GRADE "A" BY NAAC
UNIVERSITY OF DELHI
Zoology Department
(Under the aegis of Short -Term Courses Committee)
Certificate Course for students
on
ICT in Digital Learning and Data Management
January 17 - February 26, 2022
Prerequisites:- Google Classroom Google Meet WhatsApp
MODULES
• Statistical Analysis & Applications
• Search Engine & Database Tools
• Referencing Tools
• Plagiarism
• Flowcharts & Mind Map


Chrysalis, The Zoological Society
Maitreyi College, University of Delhi
(Accredited with NAAC Grade 'A')
Presents One-Day Workshop on
BIOINFORMATICS-
AN IN-SILICO APPROACH TO
UNDERSTAND BIOLOGICAL PRINCIPLES
Prof. Rup Lal,
Managing Director, Phixgen Pvt Ltd., NASI Senior Scientist Platinum Jubilee Fellow, The Energy and Resources Institute (TERI)
Dr. Nirjara Singhvi,
Assistant Professor, Zoology Department, Hansraj College, University of Delhi
"Knowledge of sequences could contribute much to our understanding of living matter" - Frederick Sanger
Last Date of Registration: 15th March 2022, 5 PM
Wednesday
March 16
Starting from
10:00 AM
Convener
Dr. Rakhi Gupta
Faculty Coordinator
Dr. Jaspreet Kaur
Patron
Prof. Haritma Chopra
(Officiating Principal)

zoomagazine2020@gmail.com

ZOOLOGY DEPARTMENT
MAITREYI COLLEGE
UNIVERSITY OF DELHI

FRONT AND BACK COVER ARTWORK:
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B.Sc. LIFE SCIENCE, II YEAR