



The Zoological Society
Sri Venkateswara College
presents



P hoenix

7th
SEVEN
EDITION

2018-2019

*...a zoologist's perception
of the world*

OF VICES & VIRTUES

Of a mind so resolute
A spirit unbreakable
The man, from Eden
Came to tell his tale
Long was the road
He built from his abode
An Act of God
He was meant to protect and love
A Brotherhood of all creatures unlike
Wherein, equality had the say.
But with passion in his heart
Man was soon poisoned with greed and caste.
To fulfil his desire
And quench his mind
He fashioned castles
And fabricated religion from fables
Battles he staged
Wars he waged
Bloodied grounds and blackened skies
With dawn came the mean machine cry
But wait
This cannot be his destiny.
Amidst this pandemonium
A seed of hope still exists
Blinded with hate
Man will again learn to live and let live.
Bestowed with abounding intelligence
He will understand and convene peace
So instead of silence ruling the seas
Let solitude sail the mast with spirits free.

By
Soumya Mallick

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FROM THE PRINCIPAL'S DESK



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It gives me immense pleasure to congratulate the Department of Zoology on the release of the 7th Edition of their annual magazine 'PHOENIX'. It is the result of immense hardwork and dedication of students and teachers alike and I applaud them for the same.

Over the years, the department has built a tradition of excellence. The department's hardworking staff creates a positive ambience where each person's unique strengths and talents are celebrated. The combination of focusing on their students' academic success as well as their social and emotional well being creates an environment where the students thrive with multiple achievements.

Touching minds and shaping futures is the guiding force of this unit and they remain forever committed to this endeavour. The role of an educational platform to not only pursue academic excellence but also empower its students to be lifelong learners is well versed with this department and keeping this in mind, the department organizes various educational excursions and visits to National Parks, various Institutions in and around the nation and always tries to put out various informative talks or address various relevant issues in a fun and innovative manner which are all organised by its society, 'Evolvere'.

I would like to conclude by the words of Albert Einstein, 'Imagination is more important than knowledge, for a while knowledge defines all that we currently know and understand, imagination points to all we might yet discover and create.'


PRINCIPAL



TEACHERS' TABLOID



Dr. Anita Verma
Specialised in Entomology
and Physiology

Wise and warm-hearted, she is the keystone of our department. She teaches us with utmost diligence and clears our doubts with imperturbable kindness.

A wildlife enthusiast, she scores high in every other field. Her animated way of teaching, like demonstrating a waggle dance always makes her classes interesting.

Dr. Vartika Mathur
Specialised in Entomology
and Ecology



Dr. Om Prakash
Specialised in Fish Biology
and Proteomics

Sporty and lively, he loves playing cricket. Always willing to lend a helping hand, thanks to him, you will have some wonderful trips.

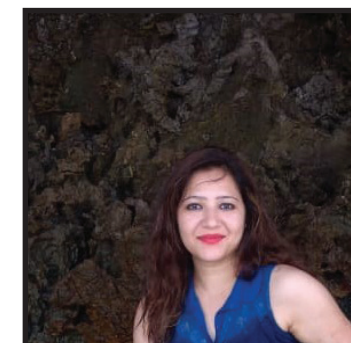


Dr. Riyaz Bakshi
Specialised in
Neurophysiology

He never runs out of entertaining stories and his jolly nature keeps the classroom engaging and fun. No one can beat his innovative dance moves.

Dancing bee of the department, her chirpy nature while teaching will drive all your troubles away. With an extremely sweet persona, she is one of the friendliest teachers.

Dr. Vagisha Rawal
Specialised in Insect Behaviour



Dr. Richa Misra
Specialised in Biotechnology
and Tuberculosis Biology

A sincere and devoted teacher, she can never run out of words. She can be a strict guide in the lab as well as the most loving and understanding friend.



Dr. Ajaib Singh
Specialised in Molecular Biology

Blessed with boundless knowledge, books are too old school for him as every topic is already programmed in his brain.



Dr. Namita Nayyar
Specialised in Molecular Biology

Elegant in style and efficient at teaching her lessons, she has a delightful personality. You can always count on her for yoga lessons as well as life advices.



Standing tall, his endearing smile acts as a driving force for the “evolution” towards happiness. Benevolent and considerate, he teaches with utmost patience.

Dr. Rajendra Phartyal
Specialised in Fish
Endocrinology



Dr. Mansi Verma
Specialised in Molecular
Biology and Bioinformatics

Meticulous and flamboyant, a rebel at heart, she loves colour coding. Versatile and hard-working, she supervises every event of the department flawlessly.

Dynamic, with a charming personality, he is a sci-fi aficionado.

Jali ko aag kehte hai, bujhi ko raakh kehte hai, aur jo kamaal ka padhaaye, usse Jayaraj kehte hai.

Dr. P. Jayaraj
Specialised in Cancer Biology
and Reproductive Biology



She is really energetic while teaching and her positivity is contagious.

Her career related advices help us to realize our true potential.

Dr. Preeti Khandelwal
Specialised in Fish
Endocrinology



Dr. Sadqua Shameem
Specializes in Ichthyology and
Fisheries

Fluent in her lessons, she provides impeccable notes. Her perseverance drives us to do better in class as well.

Zealous and hard-working, she looks for perfection in everything she does and tries to bring out the best in us.

Dr. Aarti Seherawat
Specialised in Entomology
and Animal Behaviour



FROM THE

Convenor

&

Co-Convenor

By and by, we the Zoology Department of TTD Sri Venkateswara College have stood the test of time and emerged as a model of sustainable excellence. Our continuing efforts to hold true to the vision of creative development has been proved with our Academic calendar being sprinkled with momentous achievements one after the other. Currently in the 46th Year of establishment, it is with great pride we welcome the enthusiastic participation of both teachers and students alike.

This time, celebrating the diverse nature of the Animal kingdom, we hosted our Annual Event centred on the theme, Wildlife. Beginning with a highly informative yet with abounding satire, the lecture by world renowned cartoonist and environmentalist Mr. Rohan Chakravarty, presented a whole new perspective for our young zoologists. Following this was the workshop conducted by Dr. R.T. Sharma, President of the organisation PAWS, who taught us the intricacies of animal First Aid. Complementing these were the Face Painting and Photography competitions.



Our event ended with an intriguing multilayered Quiz, enjoyed by all. With this, we proudly unveil the seventh edition of our magazine, 'Phoenix'. An embodiment of the virtues represented by the legendary creature, each page reveals a different story. A dynamic medium to channel creative energies, it asks the reader to look at the world through a Zoologist's eyes. Thus, we present you, Phoenix, the brainchild of our Editorial team.

Our deepest gratitude goes to Dr. P. Hemalatha Reddy, our honourable Principal, for her unwavering guidance and support. We sincerely thank our all society and department members for working tirelessly and keeping faith in us. Wish we keep on inspiring our students and avid readers time and again.

Thank you, all!

- Dr. *Anita* Verma
Mansi

FROM OUR

ORE



Soumya - I hereby declare that working for the Magazine was excruciatingly painful and despairingly isolating but in the end, on seeing the first print, it elevated my mind to inexplicably higher feelings of astonishment, devotion and ultimately leaving nothing less than deep love. Thank you!

Sukanya - These days I can't even work on Paint without gridlines. Creating this magazine has been strenuous with scuffles and sleepless nights, yet equally exciting and enjoyable, especially with such a talented, diligent and enthusiastic team. So, presenting you our opus, each page encompassing something fresh. Happy reading!

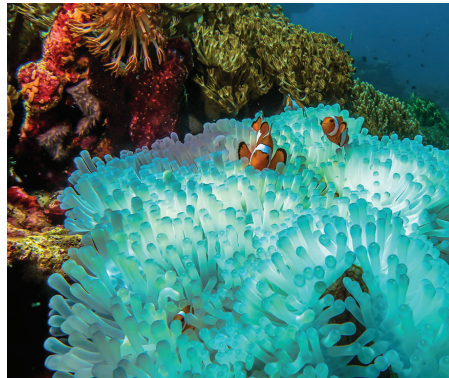
Anurag - The journey as the Creative Head of Phoenix mimics a rollercoaster. There were times when I felt hesitated, but with time I grew comfortable and got a sense of belonging. It is a post of high stature and as Nick Fury said- 'With great power comes great responsibility.'

Harshita - I am a huge magazine aficionado always flipping through pages, first captivated in their pictures and then the stories that they express. Admiring juggling between academics and extra curricular activities, the magazine has acted like a launch pad for my creative urges to blossom. It has been an utmost honour to be a part of it and I'm filled with pride and satisfaction along with a ray of hope to stir the readers' mind with a sublime amalgamation of design and context and eventually aid in realizing the bigger picture.

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Learn about how the beautiful coral reefs are dying and many more

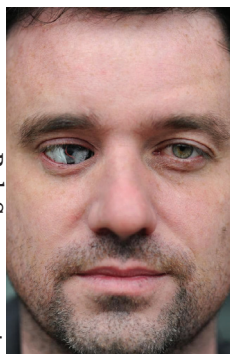
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@Mansi Dhingra

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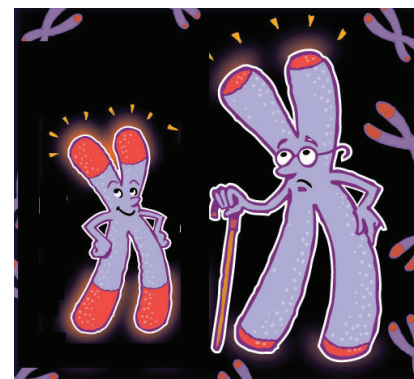


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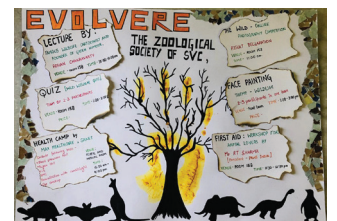
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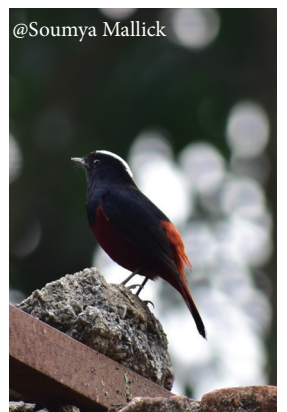
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Posters by Students



A white-capped redstart in Chunakhan Ecotourism Centre

A Trip to Corbett



*Coverpage painting by Nirmegh Basu
*Back cover tagline by Rishabh Yadav

Eyes, they say
 are windows to the soul.
 Today
 thousands of innocent eyes, look
 out of the trees, down from the sky
 deep within the water,
 at their ever shrinking homes.
 One Ape,
 out of sun scorched Africa
 threatens the wild today.
 Critters, birds and beasts alike
 all watch,
 as the drama unfolds.
 Naked land, blackened rivers,
 mountains falling piece by piece.
 The animals,
 ever so watchful
 hold their children close.
 The Ape
 raised skyscrapers and razed the wild.
 His intelligence, a blindfold.
 His metal machines, cold.
 greed guides the mean machines
 hacking woods, digging earth,
 slaughtering life; drawing blood.
 Some more eyes close today,
 Woods mourn in silence.
 Perhaps,
 the Ape wants to own
 the entire stage.



Eyes in the Woods

By
 Vaibhav Sharma,
 FZH



ANTHROPOGENIC

ANOMALIES

UNHEARD VOICE OF NATURE AMIDST THE NOISE OF TERRORISM

-Anushka Saxena, SZH

Every morning as I open the newspaper or scroll down the google feeds, almost once in every two weeks I stumble across the news of a mass shooting or a bomb blast, all accredited to one phenomenon-TERRORISM.

Terrorism, one of the most burning issues of our times and the biggest cause of mass destruction and massacre has spread all over our society like a blood sucking parasite. This has caused havoc on a global scale, yet we draw our attention only towards those who speak up, every time we sympathize or help only those who can express themselves but what about those silent sufferers? What about those poor, innocent creatures whose blood is incessantly splattered over something that they neither started nor will ever understand?

Terrorism has taken a toll not only on the human population but also on the rich array of flora and fauna surrounding them. It has promoted various illegal activities such as poaching and illicit wildlife trade due to the ability of these “businesses” to be able to help fund further more of these terrorist organisations.



The largest otter species in Asia, the smooth-coated otter, has disappeared from most of Iraq due to habitat loss and hunting.



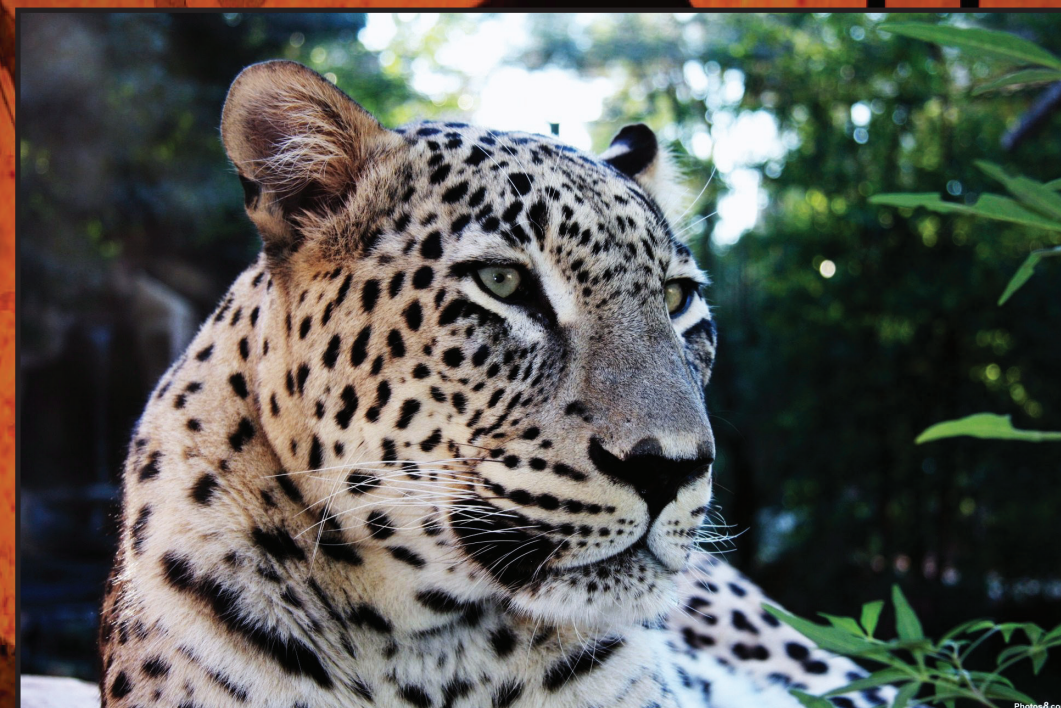
*The images are taken from internet

Constant wars such as the Iraq-Iran war have laid to waste various ecological marvels such as mountains, forests and rivers leading to animals being shelterless and starved to death due to unavailability of food. According to *National Iraqi*, due to recent disturbances via militants and army, at least 31 bird species are threatened or at the point of extinction. “Sheep and goats are regularly getting blown up,” says Sean Sutton of Mines Advisory Group, an international weapon-removal group that has cleared over 11,000 devices in northern Iraq since late 2015. The mines likely disrupted wildlife-migration patterns as well, Sutton says. Many countries have lost various species that were once taken as state symbols due to this.

But just like a tiny ray of light fights its way out through a cloud, all hope is not lost in this matter. There is a silver lining in this dark gloomy grey

cloud. Protected by landmines, which have kept humans at bay, the Persian leopard is enjoying a mini revival in the mountains along the Iran border. Also since a large group of Qatari falconers were kidnapped in Iraq’s southwestern desert, the number of visiting Gulf Arab hunters has fallen dramatically, possibly allowing some species to increase in number.

Agreed, some things I cannot change, some things I cannot fight against but there are some things I can fight for. As a zoologist or even as a global citizen, it is not only my job but rather my responsibility to make efforts in this direction as little as they may be. Every bit counts. And hopefully after reading this, I have found another comrade in this mission.



Iran’s mountainous north is home to the greatest concentration of Persian leopards left on earth

*The images are taken from internet

KERALA FLOODS A LESSON OF DESPAIR AND HOPE



Kerala, God's own land is one of the most magnificent territories with its verdant hills dotted with dense forests on one hand and the beautiful somber backwaters on the other. Come monsoon and the whole land is transformed into a lush green entity beckoning travelers to come and experience this beauty. Over and above, this year also marked the blossoming of *Neelakurunji* which happens once in 12 years. But along with these blossoms came a curse in the form of incessant rains.

The rains lashed the mountain slopes and the storm led rampant destruction all around. One could see the fury of the floods. According to the Indian Meteorological Department (IMD), there was 2346.3 mm of rainfall, instead of the average 1649.55 mm. The unstable mountain terrains could not take the burden of cement and gravel and as the rain struck, they crumbled into sediments which further increased the severity of these floods.

In such a scenario, human lives and livelihoods were destroyed. Many organizations came forward to help them recover from the threat that had descended upon them from the heavens. It was a perfect confluence of the southwest monsoon wind system and the two low-pressure systems that formed over the Bay of Bengal and Odisha. While all this was going on and the media was filled with such stories, there were other creatures who were also facing the deluge-the ones who were silently asking for help. They were trying to survive in conditions where survival itself was at stake. Many of the smaller animals in the wilderness vanished in



the mud and muck; even the larger ones were not saved. They could not reach the higher grounds and perished in the destructive landslides and the threatening waves.

Amidst all this hopelessness and devastation, there seemed to be a feeling that nature often saves its own children. The ones very near to the bosom of the earth are warned beforehand about a calamity. It was strange to see that many animals had shifted to higher grounds and safer zones in the forest before the flood waters could sniff out their lives. Not only this, there were some species- mainly amphibians which seemed to have enjoyed the water all over the place facilitating their life processes.

As the flood waters receded, the ravaged lands reflected the need and inevitability of hope, hope that man will learn and harmonize. This harmony between man and Nature could restore the beauty of this scarred State. As the

Neelakurunji blooms again after 12 long years, persevering through floods, it proves that from the ashes of destruction and despair, life will emerge again in all its beauty and slowly everything will be back to normal in God's own land.



- Pranavi Kumar, SZH

*The images are taken from internet

THE FATE OF OUR CANINE SOLDIERS

The one who serves for the nation is the one who deserves greatest of all respects. But are we serving the same sort of respect for everyone from that background? The life and respect an army person gets during their service and even after retirement is same. But what about the canine soldiers working in the same harsh conditions?

The animals like dogs and horses selected to be a part of the military forces go through tough lives, be it their training and diet or what they are served with when they are found inactive for the post, that too just for a month. They are forced to meet their fate- their death. In other words, they are euthanized or what 'they' call as mercy killing. The militants believe that they are giving the animal a peaceful and respectful death. We might question how killing a living creature gives them respect but people have reasons to explain, the first one being the safety and security of the army camps- the fear that these highly trained soldiers will land in wrong hands which could create great trouble as the animals are familiar with all base militant locations. Two, a moral one is that the animal welfare organizations will not be able to fulfill the high living standards of these soldiers and if they are released as such to live a life in a normal society, people would starve our heroes to vulnerable deaths.

It's high time to wonder whether we are left with only this solution? What an irony that under our Constitution even killing a common street dog is a crime but when we do the same thing to our canine soldiers it becomes a matter of pride and respect. Approaching different solutions, many countries have come up with new initiatives. Let's take an example of the US where military dogs are put up for adoption. According to a report between 2009 and 2013, approximately 318 soldiers found new homes. Let's come to our own country where in Kolkata roughly 90% of the retired canines in police were adopted by their own trainers. Other new initiatives could be to recruit these dogs at lower levels of job services like in malls or metro stations where they would own value and respect for the work they do.

Ending the life of these affectionate creatures cannot be the answer. The need is for few creative minds to sit together and formulate ideas where instead of executing these Heroes of ours, a better life is given even after their retirement.

-Somya Pathak, FZH



*Artwork by Akshanshi Gulani

IMPACT OF CLIMATE CHANGE ON CORAL REEFS

-Dr. Namita Nayyar

The past century was indeed a period of rapid modernisation and industrialisation. Along with its benefits however it also brought along a bigger evil: **Climate Change and Global Warming**. The causes and impacts of climate change and global warming are not unknown. According to a survey the average earth's temperature has increased by 0.8-1°C over the past century. As less as this may seem, however its implications have been ruthless. One of the major factors which has contributed to the climate change are anthropogenic (human) factors. Increased emission of greenhouse gases, deforestation and excessive burning of fossil fuels are a few examples of the anthropogenic causes.

Along with the earth's atmosphere, climate change has also affected our oceans and in turn the aquatic ecosystems. The earth's ocean cover serves as a sink which absorbs majority of the carbon dioxide. Although this results in reducing the global warming to a certain extent but in turn it has led to a change in the ocean chemistry. Increased level of CO₂ leads to ocean acidification, i.e., decrease in the pH of the water. This phenomenon of ocean acidification has enormous impacts on the marine life and ecosystem balance.

Other than this, climate change has many other effects on the oceans: it results in rise of sea level, change in the intensity and frequency of tropical storms, altered ocean circulation. This chapter primarily deals with the effects of climate change on coral reefs. To begin with, let's strengthen our understanding on corals and coral reefs.

Corals and Coral Reefs: The massive fortress

Corals are marine invertebrates belonging to the phylum **Cnidaria**. Corals usually live in colonies of identical polyps. Each polyp consists of a central mouth opening, surrounded by a set of tentacles and an exoskeleton at the base. These colonial polyps secrete calcium carbonate

to form a hard skeleton called calicle. Hundreds and Thousands (or even more) of such colonies together form the Coral Reefs held together by the limestone skeleton secreted by the corals. Reefs begin when a polyp attaches to a rock under the sea floor, then divides/buds into thousands of clones. The calicles then connect to each other forming a colony that acts as a single organism. These colonies growing for over a hundred and thousand years then connect with other such colonies and become reefs. Some coral reefs today are over 60 million years old.

These coral reefs grow in shallow and clear water with sufficient sunlight. These corals obtain majority of their energy requirements from photosynthetic unicellular dinoflagellates (zooxanthellae) that live within their tissues. Coral polyps are usually translucent in colour. It is the zooxanthellae which impart them with their wild, exotic colours.

The coral reefs in themselves are a diverse underwater **ecosystem**. They are also known as **Rainforests of the Sea**. Although these reefs occupy approximately lesser than 0.1% of the world's ocean surface, yet they are a habitat for approximately 25% of the marine species including various fish, molluscs, echinoderms and even other cnidarians.

One important aspect to remember is that these coral reefs are highly fragile ecosystems. They are an interdisciplinary correlation of zoology (coral polyps), botany (algae infestations), and chemistry (ocean environment, ocean chemistry).

Impact of Climate Change on Coral Reefs: Murder of the Reef

Climate Change is the biggest threat to the coral reef ecosystems in this day. Due to global warming the temperature of the Earth's atmosphere as well as the ocean temperatures are increasing at an alarming rate. Human activities have also contributed a great deal to climate change.

Increased emission of greenhouse gases has resulted in global warming. The ocean serves the role of a sink, which absorbs majority of the CO₂ hence reducing the earth's temperature to a certain extent, however creating a plethora of problems for itself, like ocean acidification and increased ocean temperatures. This in turn has an impact on the aquatic ecosystems and all marine organisms.

As mentioned above, coral reef is a highly fragile ecosystem. It requires adequate temperature, sunlight, depth for its healthy growth. The impact of climate change on coral reefs has been studied in detail over the last two decades or so and has shocking revelations. Warmer water temperatures and acidic environment can lead to a phenomenon called **Coral Bleaching**. Bleaching occurs when corals become stressed from elevated sea temperatures. This stress forces the corals to expel their symbiotic algal friends (zooxanthellae) which are their primary source of energy. Losing these algae have severe effects on the corals:

1. They lose their attractive colours and reveal their ghostly translucent limestone skeleton.
2. Become susceptible to diseases and other threats.
3. Become nutrient deficient.
4. Carbon dioxide absorbed into the ocean from the atmosphere reduces calcification rates in reef-building and reef-associated organisms.

5. Coral death: prolonged bleached condition eventually results in mortality.

An interesting observation is that this bleaching effect is *reversible*. If stress induced bleaching is not that severe and the temperatures are normalised somehow the reef can be restored. However, if the algae loss is prolonged and the algae population doesn't restore then the coral dies. In order for a reef to grow, it must produce limestone at a faster rate than the rate at which it is eroding. Ocean acidification slows the rate at which calcium carbonate is being formed hence slowing the rate of growth of reefs.

What happens if the Reefs Die?

The crumbling of such a massive underwater ecosystem will have catastrophic effects. Approximately 25% of the marine life passes through several stages of their life cycles in these coral reefs. Death of these reefs will mean a loss of habitat to these organisms. They will lose their homes and make them more susceptible to becoming a prey. Loss of habitat will thus lead to biodiversity loss.

Other than this the death of coral reefs will also be a great loss to the fishing industry. The coral reefs serve as major fishing zones. Along with the fishing industry taking a hit, so will the tourism be impacted. Coral reefs are a major tourist attraction and death of these reefs will severely affect the economy.





WHY EXTINCTION IS A PROBLEM?

Massive extinctions have followed five times during the earth's history, the last one being the extinction of the dinosaurs. A large number of species are lost in a relatively short interval of time. These occur every 50 to 100 million years, and according to scientists, our planet is now in the middle of its sixth mass extinction, this one instigated chiefly by humans. A new study published in the journal Proceedings of the National Academy of Sciences says that there is a "biological annihilation" on the go. The rate of die-offs are now 1000 times more than what the natural rate should be, far exceeding the rate of speciation. Deforestation, habitat loss,

habitat fragmentation, over-exploitation, climate change all induced by human activity has led to this Armageddon. But why is extinction of species an issue that is so emphasized? What happens after they disappear?

Vanishing of a single species can, indeed, have a colossal difference globally. Like fragments of yarn in a woven textile, the removal of one can outset untying the entire arrangement. Organisms are interdependent on each other as well as on abiotic components to keep our system intact. The World Wildlife Fund believes, "When you remove one element from a fragile ecosystem, it has far-reaching and

long-lasting effects on biodiversity."

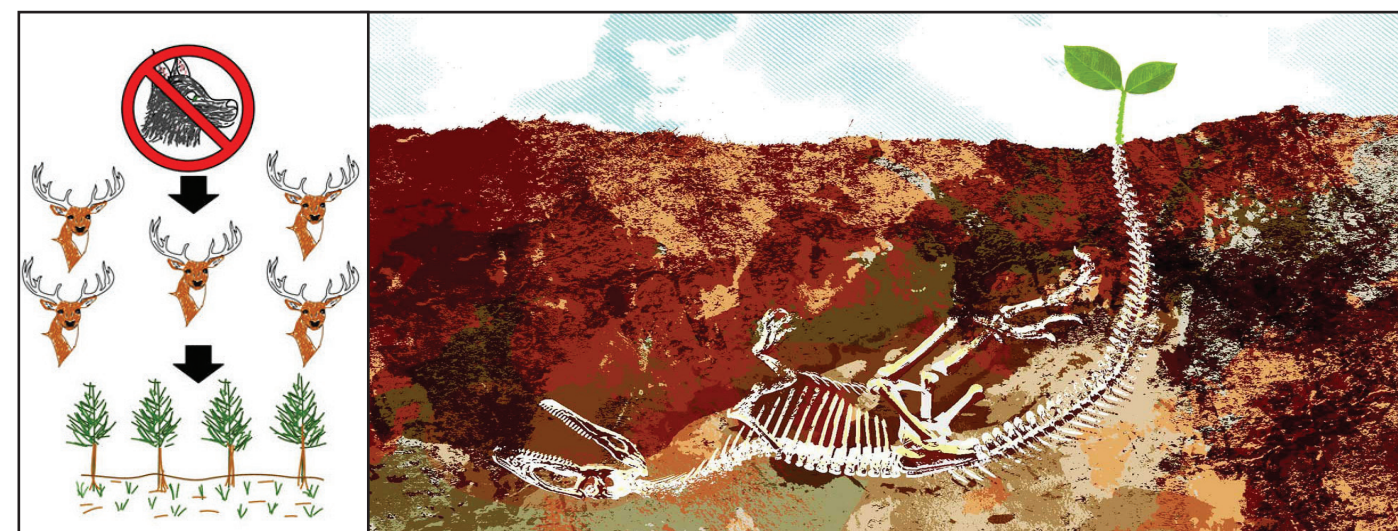
Numerous endangered species are top predators with declining numbers like the gray wolf whose populations were reduced due to mass annihilation by the US. They hunted elk, deer, moose and smaller animals such as coyotes, raccoons, and beavers. Without wolves to retain other animals' numbers in check, prey populace grew larger. Surging elk populations obliterated out willows and other riparian vegetation and songbirds no longer had adequate food or cover in these parts, threatening their existence and increasing the number of mosquitoes that the songbirds were supposed to regulate. But it's not only big animals that can affect the ecosystem. In their absence, even smaller species can have just as big an influence. Mussels, vital for the aquatic ecosystems are eaten by raccoons, otters, herons and egrets. Mussels filter water for food like a purification system. They exist in clusters called beds which are cobble hard surfaces in the water body providing support to other aquatic species. In their absence, the dependent species perch somewhere else, lowering the available food supply for their predators forcing them to vacate the area. Similar to the gray wolf, the trivial mussel's extinction like a

domino collapses the whole ecosystem, one connected species at a time. Each extinction thus weakens the biodiversity and intricacy of life.

Animal extinctions can also deprive humans of valued medical advancements. Different species with rare physiology and anatomy can offer perception into curing diseases. Scientists studied bears for evidences about how they recycle blood toxins during hibernation to figure out solutions for renal problems. Each species that vanishes may have the solution to a number of medical breakthroughs and potential life saving drugs.

Other than that, wild relatives of flora and fauna possess vital genetic information useful for developing new species with desirable characteristics. Biodiversity is also significant for recreational and aesthetic values such as art, literature, theater and music. 'It is an immense yet hidden tragedy to see creatures pushed out of existence by humans', lamented the Harvard entomologist E.O. Wilson, who gave the term "biodiversity" in 1985. Thus the loss of biodiversity is immoral as other species belong to the planet as much as we do. When a species is lost, the benefits it might have provided are gone forever.

-Harshita Rupani, SZH



The Brahmaputra

I flow untamed, undeterred,
My silver waves scattered with *parijat*
And ashes of the dead.
A man comes exploring
The secrets in my depth,
He worships me
When I quench his desolated fields
And curses me
When I uproot civilisation on my way.

I am ancient, raising Majuli
And culture of the indigenous,
I have witnessed the battle of Saraighat,
I have drowned histories and many a heroic soul
And now I endure the torments
As they try to choke me
With grease and plastic and rubble
And poison the children harboured in my bosom.
Yet, I flow, tarred and determined.

As the setting scarlet sun casts an iridescent glow
On the horizon;
A lone kingfisher flies above me,
A host of sparrows return home
To the cliffs of the venerable temple,
A hapless lad rows his sorrows
Through my arms
And a young dreamy girl sits on my banks
Wondering if I can bring the distant fables
Of cherished cities and fragrant lanes,
Or perhaps seeking refuge from all the horror
That mankind is,
Reminding me of my vitality and flair;
And I flow, boundless and sanguine.

-Sukanya Bhuyan, TZH



TECHNOLOGICAL MARVELS

IMMORTALITY

ENGINEERED:

GOD

LEAVE

PICK

SCIENCE

According to Hinduism, the ultimate aim of every living organism including human beings is to attain Moksha i.e. freedom from the endless cycle of transmutation into a state of bliss, without the vex of Birth and Death. The main reason for worship is nothing but to attain *Moksha*. But what if this so called *moksha* could be attained through science? Would then the ultimate God be Science? Will we then really dissect away God from the big picture?

Chapter 2,verse 22 of the Bhagwat Gita says that :-

"vasansi jirn-nani yatha vihaay, navani grifnati naro-parani,tatha sharirani vihaya jirnany-, anyani sanyati navani dehi"

Which literally means that as a person discarding worn-out clothes puts on new garments, likewise the embodied soul, casting off worn-out bodies, enters into new vessels. So practically it's our soul that matters and not our body, and soul in this sense may very well mean our memories and consciousness. At the end of the day it's our memories and consciousness that makes us who we are.

So even if we die, but somehow our memories and personality can be made to live, then could we maybe attain a state of immortality? Or *Moksha*?

A very strange idea, but nevertheless tenable in the near future with AI knocking at the door.

What if we could take out the memories of a person who is just about to die and transfer it into a chip and upload that chip into a supercomputer, more specifically a 'humanoid' (Just the way we backup our data from one computer to another). So now, practically we are immortal, aren't we? We can still live even though we are physically dead! So can we call this living as really living? This might just change the very definition of life as we know it.

The humanoids will have emotions, thoughts, they will have all the memories from their physical life, so essentially, have they now attained *Moksha*? Simple as that but may not be so simple at all.

If we truly ever achieve this, then will the human society really be the same? Death is the only thing that keeps us going. If we never die we will never change. The fear of Death creates an urgency of

404 ERROR: GOD NOT FOUND

sorts that powers us to be better next time. So death is that reminder that makes the whole world get up and do something. Without this, the society may attain a kind of stagnation, a feeling of procrastination, because you know that you aren't dying tomorrow!

But on the other hand you will have time to do everything that you ever wanted and more! There will be no regret of not doing something that you wanted to do. But does everyone desire eternity? Wanting to live for half a century in this bleak world is difficult, let alone indefinitely. We become lonely and bored even before we fulfill our biological lifespan! Also if the existing population isn't going anywhere then would we need to produce more progenies? Should we need to have only a single life partner if we are to live indefinitely? A whole lot of questions arise which do not have any so-called answers, yet.

Even though it sounds like Sci-Fi but it is quite feasible. You could be your own GOD now, but remember every computer crashes, gets hacked, infected by viruses and most significantly has a SHUT DOWN button that is not under the control of the computer itself.

-Nirmegh Basu, FZH



The images are taken from the internet.

HUMAN CYBORGS: SCIENCE FICTION MEETS REALITY



-Ankita Saha, SZH

A cyborg is defined as a fictional or hypothetical person whose physical abilities are extended beyond normal human limitations by mechanical elements built into the body. Modern advancements in human augmentation like bionic eyes and third thumb prosthetics are blurring the lines between fiction and reality. Following are some of the most salient examples.

1. THE EYEBORG

Rob Spence, a Toronto based filmmaker was declared legally blind after he accidentally shot himself in the eye as a child. In 2008, he got his eye replaced with a camera. The camera, equipped with a radio frequency transmitter can be operated with a magnetized reed switch. The camera works on analog signals and can record for 30 minutes.

2. HEARING COLOURS

Neil Harbisson, a New York City-based activist and artist was the first legally recognized cyborg. He sees the world in greyscale as he was born without the ability to see colour. However, in 2004 he decided to get an antenna embedded in his skull, which he calls an eyeborg. This antenna converts the frequency of colours into vibrations, thus, allowing him to hear colours and even frequencies such as infrared and ultraviolet. After a recent update, his antenna is Bluetooth and wi-fi enabled which allows him to receive phone calls and even data from satellites. "There is no difference between the software and my brain, or my antenna and any other body part. Being united to cybernetics makes me feel that I am technology," he said in a **National Geographic** interview.

3. SUPERHUMAN SENSE OF TOUCH

Researchers have created synthetic skin that is more sensitive than even human skin. The technology uses a tactile sensor based on magnetoimpedance material embedded with an air gap. Applying even a minuscule amount of pressure, such as a blowing breeze can cause the movement of the magnetic particles closer to the sensors, this movement is then transmitted electronically. However, transmitting these signals to the brain remains a challenge. This research was published on September 19, 2018, in the journal **Science Robotics**.

4. BRAIN IMPLANTS TO BOOST MEMORY:

Dong Song, a research associate professor at the University of Southern California (USC) has demonstrated the use of brain implants to boost memory. The implants collected data on brain activity during simple tests. The researchers mapped and identified the regions that displayed the most activity. In another trial, these electrodes were used to stimulate the areas identified for correct answers. This improved the working memory by 25% and the short-term memory by 15%. This research can have a monumental impact on the treatment of Dementia and Alzheimer's disease.



*Images are taken from the internet..



Just imagine how it would be like if we get to play with our brains, touch them, feel them, study them. Fascinating huh? Neuro-Scientists have got hold of a new toy to fiddle with called MINI BRAINS. It has increased their power to unlock the secrets of the beautiful human organ responsible for thoughts, emotions, dreams, and memories. Mini brains are nothing but lab-grown neurons and other brain tissues. Since long, brain has been hidden behind tough skull and layers of meninges. The only way for scientists to study the development of the brain has been through autopsy, animal models and imaging techniques. But the magic happens if we get to touch these tissues! The science lies in the usage of stem cells. Stem cells are a mass of undifferentiated cells that can develop into any tissue. The purpose of using them is to grow an organoid or organlet. These are nothing but three-dimensional miniature organs that are grown in vitro. So, what a neuroscientist does is to extract skin cells from a patient with a disorder like maybe schizophrenia and use it to generate stem cells. Then these stem cells are given an adequate concentration of sugars, vitamins, and

minerals as the source of nutrition. These are then embedded in a protein gel that mimics embryonic environment which is then stirred in a bioreactor, set at body temperature and voila! You have a miniature organ of your own.

The technique can be used to study neurological diseases like microcephaly, autism, Alzheimer's etc. Let's take the example of microcephaly where the brain size is significantly smaller than normal. It occurs due to the early death of neurons formed from neural stem cells. Using CRISPR on these organoids, we can induce mutations and investigate all possible factors responsible for this degeneration. The growth of live cells can be seen via the development of these organlets. What makes humans different from a gorilla can be studied via the development of these organoids. The evolutionary mystery of what makes us humans UNIQUE can be dealt with this. Study of effects of drug and toxins on the brain through mini brains can be a possibility too. We never know, these mini brains could be grown into a full-sized brain someday which might even lead to curing brain death and maybe realizing the idea of immortality!

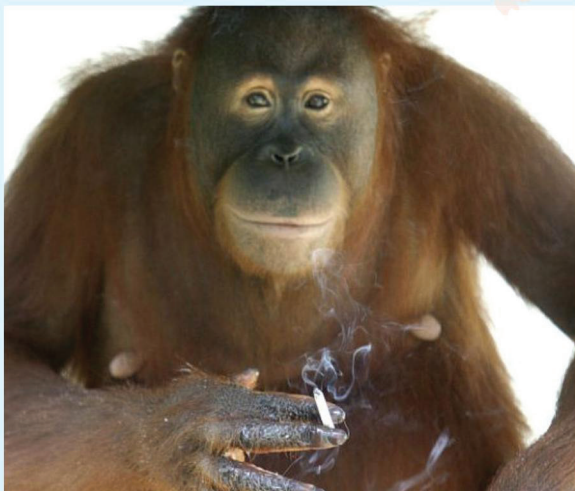
-Priyamvada Singh, SZH

NEW TOY IN
THE LAB - MINI BRAINS

*Images are taken from the internet.

BEAUTIFULLY BIZARRE

-Durga Bahadur Mizor, FZH



TORI, THE SMOKING ORANGUTAN

Tori, an Orangutan living in a zoo in Indonesia, is a serious chain-smoker. She started smoking about a decade ago when some visitors threw cigarette butts in her cage. Her addiction grew so strong that she started demanding cigarettes from people and even her handlers had to face her tantrums when she was denied that. The Indonesian zoo was even condemned for this. But after relocation and rehab, and successfully giving birth to a healthy baby, she finally kicked the habit and devoted to be a full time mother.



CIRCLE OF DEATH

Army ants are considered as the deadliest of ants. They move and hunt like a single organism and overwhelm anything that is in their way. They are blind and therefore they follow the smell of the immediate neighbor ant in order to reach the nest. Sometimes the chemical trails of a large group of army ants may get looped around into a circle and form an Ant mill. The ants will therefore continue walking round and round in a circle until they drop dead from exhaustion.

COWS THAT LOVE COMPASSES

In 2008, scientists discovered a strange behavior in one of the most common animals of the world: the Cows. Thanks to the new perspective of Google Earth they found out that a significant portion of cattle around the world were standing in a position pointing themselves either North or South. How? It seems that cows, like many other animals have Magnetoreception, the ability to sense the Earth's magnetic fields. As to why they align themselves that way, that remains somewhat a mystery.



*Images are taken from the internet.



WAR FOR THE PLANET OF THE APES

If you have watched this movie you might know what we are talking about. Chimpanzees fight their battles in a humanly manner. They deploy tactics, perform raids and capture territory. They show discipline and tactics like human soldiers. They even show the habit of infanticide and cannibalism. They are extremely effective predators. A study showed that the population of their main prey, the Red Colobus Monkeys, fell down by 89% between 1975 and 2007 and are nearly driven to extinction



LIZARDS THAT SHOOT BLOOD

Horned lizards have many defense mechanisms in order to help them escape predators: like hiding and camouflaging. But when threatened with an attack, this creature shoots foul-tasting blood as its own version of pepper spray from its eyes. Thin blood vessels around the eyes rupture under pressure and squirt blood out at the attacker. In addition, the blood contains canine repellent chemicals which puts off its predators. While this mechanism is very effective, the lizard uses it only as a last resort.



THE BOWER BIRD

The Bowerbird enjoys decorating. Not only does the Bowerbird make great efforts to adorn its nest, it even goes so far as to destroy the nests of its neighbors in order to draw more attention to his own. In an effort to attract a mate, the male Bowerbird builds what are termed as 'Bowers'. It is a meticulous decorator and uses flowers, feathers, stones and bits of discarded plastic and glasses to build his nest in the hopes of impressing a female. It focuses on decorating for hours and only breaks concentration when it goes to another bird's home to steal or vandalize.



COMPENSATION FOR UGLINESS

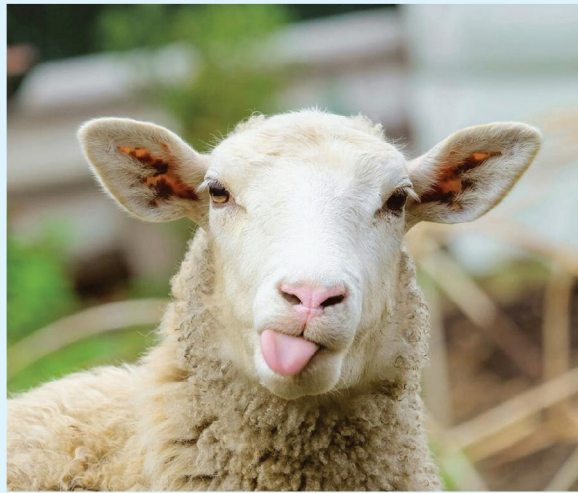
Zebra Finches are monogamous and have been known to lay larger eggs when their mate is sexually unattractive. The females invest more resources, both in terms of egg volume and yolk carotenoid content, when paired to a low genetic quality male. This investment pattern is known as Compensatory Investment. This increased primary investment like egg nutrients could compensate for the low genetic quality.

*Images are taken from the internet.



EMOTIONAL ELEPHANTS

The strangest emotionally driven animal behavior is also exhibited by Elephants. They have seemingly human rituals concerning the dead. For instance, they have been known to visit gravesites on a daily basis, to bury their dead and spend some time in grief around the body of a dead herd member. Elephants even take leaves, dirt and branches and cover other elephants after they die. This shows that elephants are extremely empathetic animals just like our dogs.



ANIMAL-EATING HERBIVORES

Most herbivores like Cattle and sheep eat grass and plants as their usual diet. But they are known to turn on their fellow farm animals and can eat small chicks too. Apparently they turn carnivorous when their usual diet is low on nutrients. Not only cows and sheep, a range of other herbivores like deer, camel, girrafes, pigs are known time-to-time to eat other animals or animal parts they find lying around.



THE SUPER SNAP

The pistol shrimp is considered as one of the loudest animal in aquatic life. It has the most amazing weapon in the animal kingdom. In order to stun its prey it snaps its claws at about 100 km/hr speed. The resulting sound is actually a sonic boom and the shockwave that the snap creates is powerful enough to stun its prey. To make things really interesting, the temperatures of the resulting snap momentarily gets to 4000°C which is as hot as the surface of the sun.



BRAVE WILDERNESS...



BRAVE WILDERNESS...

Crumbling Fate of Nature's Bio-indicators

-Sukanya Bhuyan, TZH

How do you generally perceive amphibians? Do you just think of them as slimy, creepy and grotesque creatures with large bulging eyes and long retractable tongues and suspect what might be their purpose on this planet?

bahuvistara. Some amphibian species are known to secrete antimicrobial peptides from their skin which are potent blockers of HIV infection. Researchers are constantly trying to understand regeneration in salamanders for application in human organs.

Amphibians have long been used as models for studying physiology, but a noteworthy fact, which we often brush aside is that they are significant models for ethology as well. We can study them without the bizarre act of cutting through their integument! Frogs have an elaborate mating system where the males compete by producing the most impeccable calls just to get the attention of the female. An intriguing behaviour is observed in some species like *Pseudacris crucifer* or spring peeper, a tree frog and Great Plains toad (*Anaxyrus cognatus*) which exhibit alternate mating strategies such as satellite behaviour where an inferior male tries to intercept females by simply remaining near other dominant males who calls or displays. Also, exceptional parental care is observed in many amphibians, especially anurans. Male *Rhinoderma darwinii* or Darwin's frog, a small South American frog carries fertilised eggs in its vocal sacs till they undergo complete development. In the



If you are an Assamese, it's highly improbable that you haven't heard of the term "Bhekuli Biya", which is basically a wedding of frogs held to please the Gods in the hopes of a timely and adequate rainfall for a good harvest. It's an age-old myth that when frogs croak, it rains. But the significance of amphibians is not just limited to weird and amusing cultural beliefs; they in fact play a far greater role in nature.

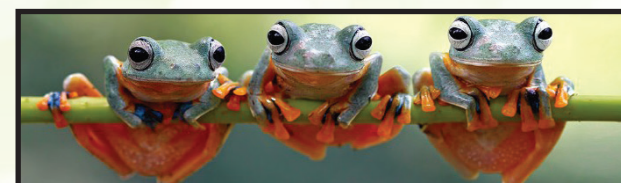
Perhaps the most important significance of amphibians is that they are reliable bio-indicators of an ecosystem's health (because of their highly permeable and glandular skin, they are extremely sensitive to environmental toxins). They also act as an integral part of food webs and help in nutrient cycling. In addition to these, researches are constantly looking for various medicinal compounds which can be obtained from amphibians. Recently, antiviral peptides which can kill H1 variety of influenza viruses were detected in skin secretions of an Indian frog, *Hydrophylax*

There are around 8000 amphibian species on earth (almost as high as the total number of bird species present and way higher than mammals). Moreover, scientists have speculated that not even half the actual number of amphibian species present has been discovered yet, owing to the fact that on an average, 150 new species are identified every year!

common Suriname toad (*Pipa pipa*), the fertilised eggs get implanted in several invaginated pits on the back of the female and they emerge as small fully developed adults. The female *Amphiuma means* or conger eel, a salamander is known to coil around its fertilised eggs to protect them.

All these attributes conclude that amphibians are fascinating creatures indeed. Sadly though, one-third of the world amphibian species are threatened with extinction. Habitat loss and habitat split are two main factors that contribute to their declining population along with factors such as water pollution, climate change, invasive species and the deadly chytridiomycosis, an infectious fungal disease of amphibians. Needless to say, most of these threats have anthropogenic origins.

Adding to this dejected scenario, amphibians are also one of the least studied groups; a quarter of the amphibians' species are deficient in data. So along with conservation methods, further studies regarding their behaviour and ecology are equally imperative. Amphibians were the first vertebrates to venture out on land and they form an indispensable part of our ecosystem and conserving them requires urgency lest we lose them even before they are discovered!



Hydrophylax bahuvistara



Rhinoderma darwinii



S O L I G A S

Children of Bamboo

Who said the man and the beast can't coexist? After all both are creations of the same planet...

The tiger, an immensely charismatic animal has the country in its grasp since the title of 'National Animal of India' was shifted from the lion in 1972. And with the Project Tiger gaining momentum, it's the most famous beast in the Indian Subcontinent. Although much needed, these methods of conservation have taken a certain destructive toll on the life of tribals living in the forests.

One such tribe is that of the Soligas. These indigenous people are native to the Biligiri Ranga Hills of Sourthern Karnataka and Tamil Nadu as well. They speak the Dravidian language 'Sholaga' and have now diversified into 5 prime clans. Living inside the Protected Area of a Wildlife Sanctuary, their earlier occupation of shifting cultivation has been replaced by harvesting and selling NTFP (Non timber forest produce). The story of this tribe is unique as it hems on their courage and perseverance by fighting the battle for their ancestral forests rights. Soligas are the only Tribal sect that have been officially granted the traditional rights to forestland and produce by the Court of Law.

Authorities supervising the conservation programmes, see the Tribal community as a threat to the Wildlife. Tribals residing in forests coming under the jurisdiction of Protected Areas are being forcefully evicted from their ancestral lands. They are branded as 'poachers', arrested, beaten up and tortured to the point where they are forced to leave their forests in order to escape this cruelty. The Soligas once faced with these harsh realities, decided to fight back.

The year was 1974 when the government

THE HULIVERAPPA

declared BR Hills including the Biligiri Ranganatha Swami Temple area as BRT Wildlife Sanctuary. This lead to the eviction of many Soligas from their forests and subsequent relocation to the nearby plains. After years of turmoil and restrictions, the Soligas approached the Court in 2008. While being tangled in the painfully slow proceedings, this time the government declared the Sanctuary a Tiger Reserve, banning the collection of forest produce entirely. Even as nomads, they knew this was a hasty and unfair decision. For not only they worship the Tiger as their God, known as Huliverappa, their impeccable knowledge of the Forest and its produce aids in preserving the entire ecosystem. Continuing with their battle, it was in 2011 when the Court finally ruled in their favour.

This one Jugdement will have long lasting implications in deciding the course of conservation in the Country. It is time we realise that the tribal heart is the true one. It is us who have lost our tune in this symphony. Evicting hundreds of tribals from their homeland like that of the Baiga tribe from Kahna tiger Reserve while we entertain thousands of tourists every year has and will only aggravate the ecological imbalance. A new Conservation model with the inclusion of the tribals as the guardians of forests and wildlife is needed for a sustainable future.

Supporting further, the Soligas offer their first yield of farms to the animals and birds. The purity and honesty of their relationship with nature cannot be doubted. Not a single man-wildlife conflict has been cited, instead tiger numbers have doubled with their presence. Only a fool would question their significance.

- Soumya Mallick, TZH



A Soliga man praying to the Forest



The BR Hills



Gatherings from the forests



A Soliga child

Machbagha

another wildcat on the
verge of extinction

-Sukanya Bhuyan, TZH



India is home to 15 wildcats including the famous Bengal tiger, Asiatic lion and leopard but how many of you know about India's only wetland felid, the fishing cat? The fishing cat, which is also the state animal of West Bengal is a medium-sized, nocturnal wildcat of South and Southeast Asia and prefers to live in wetlands like marshes, swamps and mangroves. As its name suggests, it primarily preys on fish and is an excellent swimmer and can even dive underwater to catch its prey. Sadly, at present, this animal is categorized as Vulnerable under the IUCN Red List owing to the dramatic global population decline over the last decades. Recently in June last year, a fishing cat was rescued by forest officials in Jharkhand where it was spotted after forty years!



Machbagha, a documentary, brilliantly directed by Kaushik Mukherjee highlights the threats faced by the fishing cats in some human dominated landscapes in Howrah, West Bengal. Aside from retribution killings and persecution due to clashes with the livelihood of the local fishermen and villagers, the major threat to the wildcat is the destruction and loss of its habitats due to conversion of wetlands to residential sites, highways, industries and intensive aquaculture or agricultural fields. With so many Conservation Policies and Wildlife Acts in India, how could have this developed, right?

Although 26 wetlands in India are now listed as Ramsar Sites and 115 wetlands requiring urgent conservation and management are identified under the National Conservation Wetland Programme (NWCP), in reality there are over 27000 wetlands in India and no specific laws for their protection. Moreover, marshlands which also happen to be the habitats of the fishing cats are presented as wastelands under land use policies which provide a blooming business for land sharks and real estate agents.

Appraisal of the existing policy contradictions and establishment of new stringent laws are required for conserving the wetlands and ensuring their wise use. By educating the locals about the importance of wetlands and the fishing cats and by allowing these people to actively participate in the surveys and protection of these species, can lead to their preservation outside protected areas as well. Efforts by organizations like EGREE Foundation (East Godavari River Estuarine Ecosystem Foundation) and Human and Environment Alliance League (HEAL) are already showing positive results. Only with immediate conservation measures, we can hope to safeguard the survival of this species.

*The images are taken from the internet

INDIAN UNEARTHINGS of 2018

*The images are taken from the internet



Monopterus rongsaw



Monopterus rongsaw

During attempts to find caecilians in the Khasi Hills of Meghalaya, scientist Rachunliu G. Kamei and her team discovered a new species of hypogean swamp eel named *Monopterus rongsaw*. "Rongsaw" in Khasi means red. This eel lacks any skin pigmentation and appears bright red due to the presence of a dense network of capillaries which aids in respiration. It was found at a depth of about 16 inches (40 centimeters) below the earth's surface which explains its barely visible, tiny eyes.

Megophrys

After 14 years of research, scientists in the Northeast have discovered four new species of the elusive Great horned frogs. With unique fleshy horn-like projections on the upper eyelids, their tadpoles exhibit a peculiar funnel-like mouth character. Earlier these four species, the Himalayan horned frog (*Megophrys himalayana*), the Garo white-lipped horned frog (*Megophrys oreocrypta*), the Yellow spotted white-lipped horned frog (*Megophrys flavipunctata*) and the Giant Himalayan horned frog (*Megophrys periosa*), were thought to be a single wide-ranging species. Unravelling through DNA analyses, this discovery highlights the unique diversity found in the Northeast.



Megophrys periosa

Uropeltis bhupathyi

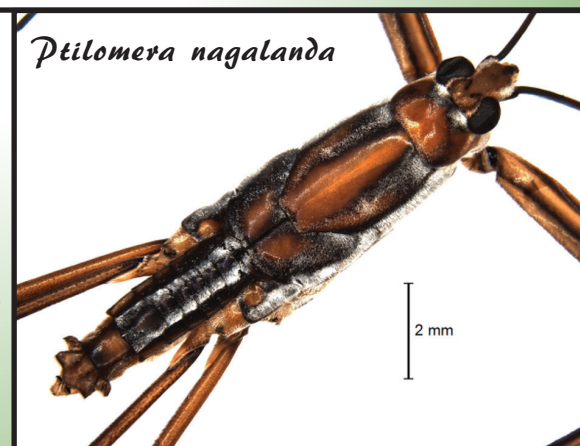
Currently found only in the Anaikatty Hills of Tamil Nadu, *Uropeltis bhupathyi* or Bhupathy's shieldtail was named in honour of late Dr. Subramanian Bhupathy, a renowned herpetologist. This snake is around 40 cm in length and its most distinguishing feature is the presence of more than 200 ventral scales. Shieldtails endemic to India and Sri Lanka, are non-venomous, burrowing and feed on mostly earthworms and arthropods.



Uropeltis bhupathyi

Ptilomera nagalanda

A previously unknown water strider species was discovered by scientists from the Zoological Survey of India (ZSI). Published about in the science journal Zootaxa, its the presence of black stripes on the dorsal side that distinguishes this from other known species of the subgenus *Ptilomera*. Measuring about 11.79 mm this species has particularly long slender legs. With this revelation, the number of species of water striders belonging to the subgenus has increased to six in India.



Ptilomera nagalanda

Dario neela

A new species of fish found from a rather secluded stream draining into the Kabinji river in the Wayanad district of Kerala was catalogued as *Dario neela*. The name describes the wide rims of iridescent blue in all median fins and the pelvic fin present in males. Belonging to the Badidae family of fishes, this genus is prevalent in the north although the southern Indian *Darios* are quite different and rare from their northern cousins. This discovery from the Western Ghats might help us understand the evolutionary relationships amongst these Badidae fishes and also with their north Indian counterparts.



Dario neela

Cyrtodactylus

Six new species of nocturnal, bent-toed geckos were discovered from different parts of Northeast India-Guwahati bent-toed gecko (*Cyrtodactylus guwahatiensis*), Kaziranga bent-toed gecko (*Cyrtodactylus kazirangaensis*), Jaintia bent-toed gecko (*Cyrtodactylus jaintiaensis*), Nagaland bent-toed gecko (*Cyrtodactylus nagalandensis*), Abhayapuri bent-toed gecko (*Cyrtodactylus septentrionalis*) and Jampui bent-toed gecko (*Cyrtodactylus montanus*), all of them named after the place of their discovery.



Cyrtodactylus guwahatiensis

Fejervarya kalinga and *Fejervarya krishnan*

Two newly discovered species of the morphologically cryptic cricket frogs-*Fejervarya kalinga* from the Eastern Ghats and *Fejervarya krishnan* from the Western Ghats are described as bio-indicators which can also help to study climate change impacts. The *kalinga* species is known to breed in winter instead of the rainy season. It is one of the largest of its group, growing up to a size of 6.5 cm while the *krishnan* species grows about 2 cm in size. These species were discovered by a team of herpetologists from the Wildlife Institute of India (WII), the Zoological Survey of India (ZSI) and the North Orissa University (NOU).



Fejervarya kalinga

Teretamon kempi

A small freshwater crab was discovered by scientists of ZSI at Namdapha Tiger Reserve of Arunachal Pradesh. The crab, just around 1.5 inches in size is endemic to Namdapha and is observed to breed only during the monsoon. It resides under small stones and crevices near dried or semi-dried areas. India is home to 120 freshwater crab species, 10 of them from Arunachal alone. Scientists speculate that this species can serve as a reliable environmental indicator.



Teretamon kempi

Fallen Crest

Such is the land I dream of
Where the wind with eloquence endless
Meets the eagle in its fearless flight
To tell some sylvan tales of pure delight.

Where the Bustards with feet firm
About to witness a future of colossal unrest
Are not mourning their ravaged nests.

I believe one day when the Peafowl dances
Its azure hues of blue and green
Are not hunted by bullets unseen.

When we no longer curse the hearty Crow
Prejudiced against its feathers black
For evil and other mindless tact.

The Kakapo will then find out a world
Stretching beyond the confining boundaries
Of its last standing home and survival dreary.

Uninterrupted and untamed be the calls of the Bellbird
Searching for a mate of its choice
Away from the bedlam of horns and noise.

I hope to see the Sparrows return
Spin holes and revel all day long
To a tune the ancient wood nymphs had once sung.

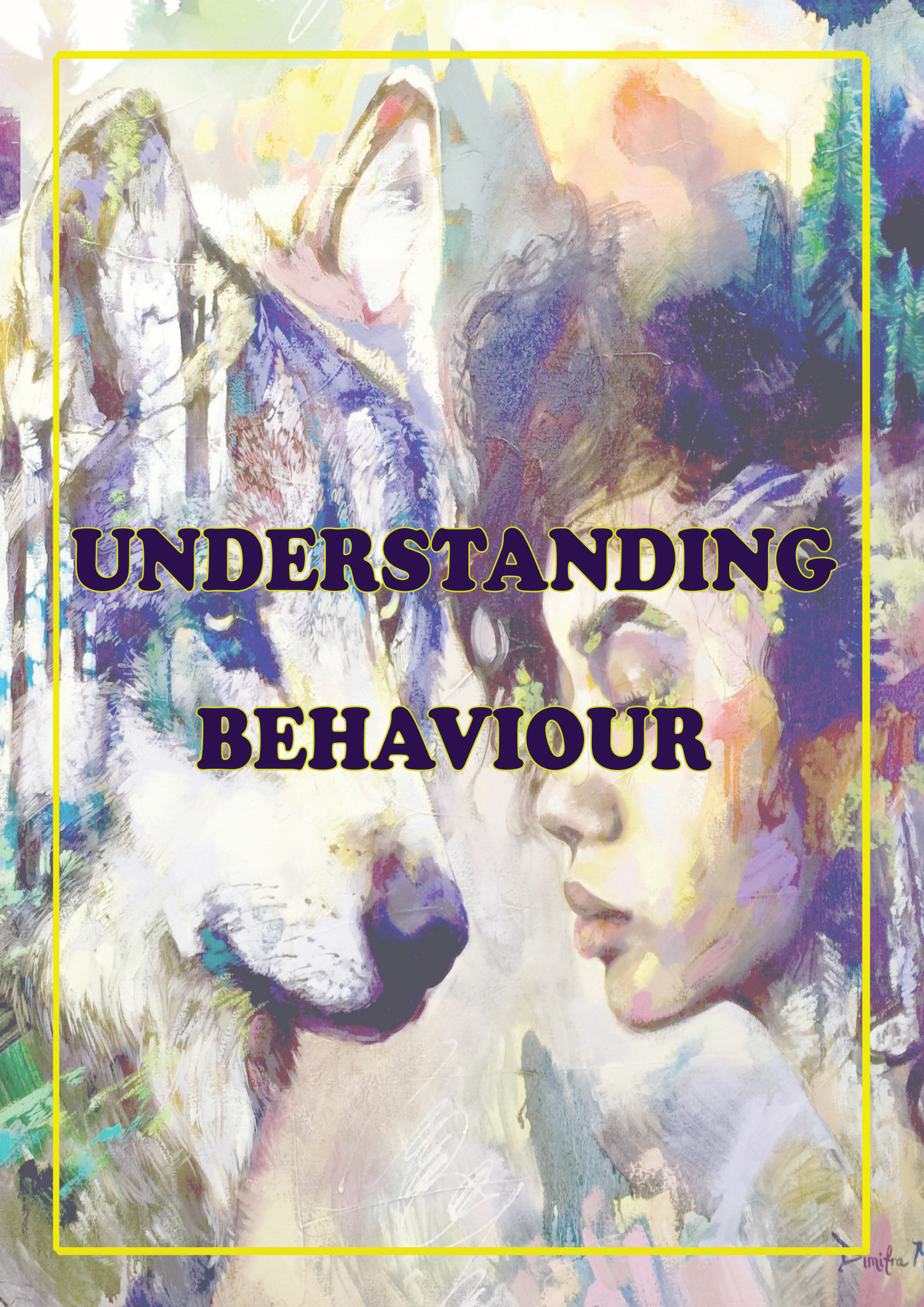
Shot in the starlight; a promise broken
Heathens they were made
Their feathered souls betrayed.

When coexistence should have had the say
Our dances of greed and songs of hatred
Stole the stage away.

And the Man became less.

Be the Albatross or the Mariner disgraced
With time
All shall be laid to waste.

By
Soumya Mallick, TZH



**UNDERSTANDING
BEHAVIOUR**

Arting ltruism

31

Ever heard of the term 'Altruism' or 'altruistic actions'? From the perspective of Evolutionary Biology, an altruistic organism harms itself to an extent of risking its own life or losing opportunities to reproduce for another organism's benefit. So does being altruistic really leave you in a sticky position? Your help might give others a greater advantage over you while you are left counting your losses. Superficially, YES! It does indeed seem like that. In the highly puzzling discipline of Animal Behaviour where the term finds its true evolutionary meaning, we are faced with the ground reality of what it truly means to be the ultimate winner by losing everything.

Now painting this picture further, we encounter the example of the Malaysian Exploding Ants (*Camponotus saundersi*). They indeed explode their very guts out in order to protect their colony. The soldier ants are entrusted with the duty to protect the colony from any invading predators. At first site, these stingless tiny beings lacking even mandibles, look like real easy picklings. But as nature would have it, their diminutive appearance hides their deceptively lethal secret. Learned in the art of warfare they burst with deadly chemicals oozing out and gift the ultimate sacrifice, their lives, for the survival of their kin, all the while carrying a fate of never becoming a fertile female in their lives. This is where the heart of Altruism lies and also where we encounter the term, kin selection. This is the profound reason why Altruism still exists amongst organisms. Through Natural Selection, Darwin's dictum, any trait that hampers the survival of the being is eliminated from the population. Then Altruism by all means should have been extinct.

Intrigued? Enter Selfish gene, Dawkin's darling. The altruistic individual by helping his own genetically close relatives, its kin survive, is in truth ensuring that his own genes proliferate. If you realize, the more genes you share with someone, the more important is their well being to you. Consider your own siblings and your cousins. Who would you rather drop dead for? Your sibling, most probably. Because if they live to see the day, a higher proportion of your alleles will survive in comparison to if you had chosen your cousin to save.

So now the case of exploding ants might seem less selfless to you. After all, by protecting their

an immense feet achieved only by us. An element of prosocial behaviour, it is embedded in our nature that we feel obliged to help others in distress. Many people forego their chances of building bloodlines and dedicate their entire lives for the upliftment of the society. Millions of soldiers lay down their lives for the idea of a nation and the ideologies of their leaders, even a small child can't see an injured bird.

Although a populist opinion, many have countered it as well. Ayn Rand's *Atlas Shrugged* celebrates the virtue of selfishness, not selflessness. Objectivism being the main theme, she flatly rejects Altruism. Every man lives for himself.

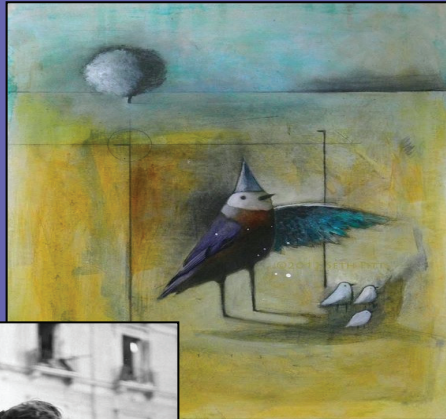
All these schools of thought may prevail, and that is where the beauty of complexity lies. Man's distinguishing feature from all other forms of life is his ability to analyse. Our critical forethoughts allow us to circumspect the aftermath of any situation. Some may have waged wars, but more of us have lent a helping hand. Genetic success is not our touchstone. Rising above small talks and egoism, will design the higher man with greater intellect and stronger emotions.

Not every organism is blessed with a brain like ours. With our freedom we can liberate others, be it a man or a beast in need.

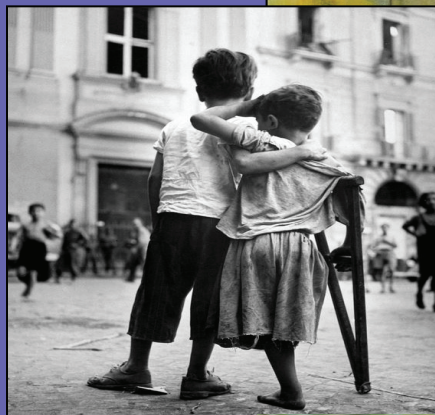
-Soumya Mallick, TZH

entire colony, their genetic success is enhanced as compared to the ant itself producing a few antlings. Genetic success of an individual is imperative to leave a mark in evolution. That is why creatures feel less obliged to help others who are distant or random in relation. If a gene is not selfish for its survival then it will be eliminated. Altruistic genes albeit are saviours but also ensure their existence in the future generations.

Coming to humans, the saga of Altruism takes odd twists and turns. Though kindness, compassion and empathy are some of the defining pillars of humanity, but these being enacted for the well being of complete strangers even other animals is



Parental investment



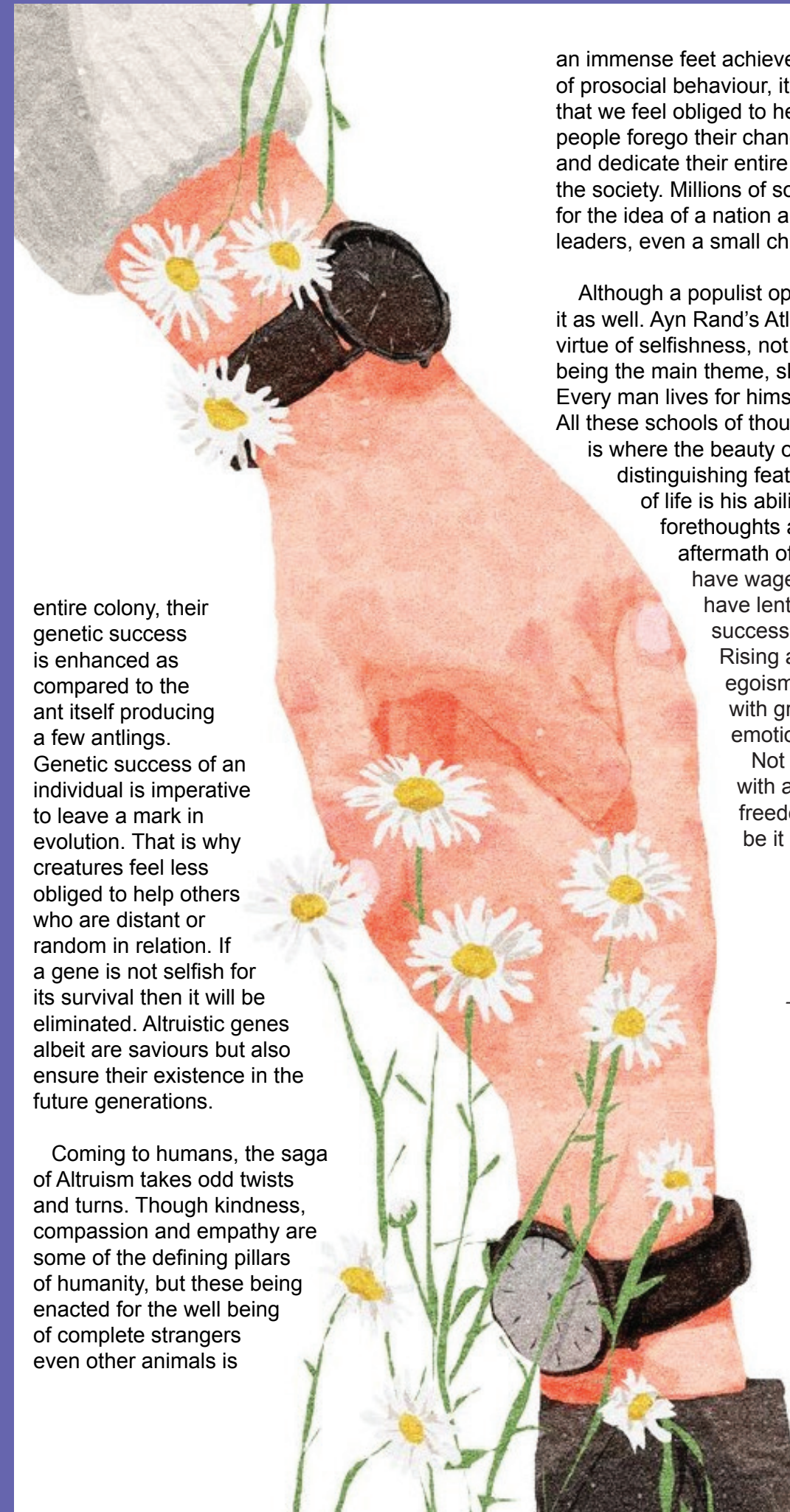
Human children



A sentinel meerkat



Camponotus saundersi





As far as one can think of cannibalism, it seems to be all about eating someone from your own species. But when it gets combined with carnal deeds, it starts to get creepy. It's really hard to believe and repulsive to think that your sexual partner could just eat you up any time after you mate with them. Shockingly, for male spiders, it's inevitable!

In many species of spiders, ravenous females can eat the males before or after they mate or even during copulation. Scientists have tried to put forth so many complex evolutionary reasons involving costs and benefits to the species, sperm competition and esoteric sexual selection schemes for explaining this behaviour but it all melts down to "size" mostly. Upon scrutiny, you'll find that almost all the species of spiders have females with a size way larger than their male counterparts, and this makes the males vulnerable to sexual cannibalism. The poor males being smaller, are easier to catch and therefore more likely to be eaten by the females, as well as other predators. The larger females eat the males simply because they are hungry, and they can. Talking about those species of spiders where males are larger than the females, the wolf spiders like *Tigrosa helluo* provide an excellent example. Studies

LETHAL LOVE

have shown that large males are almost never eaten by their mates, while the small males are consumed 80 percent of the time. In another species, *Lycosa hispanica*, the most voracious females tend to kill the males while the docile females only mate.

Perhaps the most renowned is the black widow spider *Latrodectus*. Black widows get their name because females carry out sexual cannibalism after mating. The female often kills and eats the male so that the females would get a ready source of protein, which would be beneficial to the offspring now developing inside her. This explains the males' short lifespans; female spiders can live up to three years, males typically live for one or two months. There are around 31 species of these widow spiders but none so infamous as the *Latrodectus mactans*. With a venom 15 times more potent than a rattlesnake, one small bite can potentially endanger your life. Whatever be the case, it's surprising to find that such a simple characteristic such as size can have such a large effect on the frequency of sexual cannibalism and this phenomenon is undoubtedly quite gruesome! Thank goodness, it doesn't happen in humans!

- Amit Bhatt, FZH

*The image is taken from the internet



- By Vaibhav Sharma, FZH

Year 1871, Lewis Carroll in his book *Through the looking glass*, introduced us to the Red Queen. A mirror world where forward is backward and slow is fast, the characters live their lives on a giant chessboard. Here the Red Queen explains to Alice that she needs to run continuously in order to stay in the same spot. It's a story of Alice's journey from being a pawn to becoming the Queen at the end of chessboard. The story came to life when Van Valen (1973) proposed the Red Queen Hypothesis as an explanation for evolutionary change in organisms. It has been used to describe the process of coevolution between predators and prey, origin of sexual reproduction in terms of hosts and their parasites. For example, the centuries old arms race between bats and moths.

Active predation by birds drove many moth species to adopt a nocturnal lifestyle, effectively occupying a new niche. Fifty million years ago, night skies teeming with moths saw the arrival of a new runner, the bats. Small mammals, capable of flying, bat population rose in the dark larder of moths. Soon the struggle escalated into a fully fledged arms race. Over time the moths developed ears to detect the sound waves of approaching bats and plummeting down for cover. Development of hearing swung the balance in favour of moths once again. But the bats were not done yet. Natural selection favoured the bats that relied on normal hearing for finding prey as moths had no defence against that, allowing sensitive ears to develop. Consequently bats used echolocation for avoiding hurdles in their path but as they approached a moth, they switched over to auditory senses, once again becoming undetectable to moths, an example of which is the sly long eared bat. In an attempt to outmaneuver bats, some moth species returned to their diurnal life, coming a full circle. Again faced with birds, today moths use different tactics like brilliant colours or camouflage, even an unpalatable taste to avoid becoming a dish.

Taking due note of this, we learn of the brilliantly crafted marathon for greater representation amongst organisms. With evolution as the game changer, the species are continuously running to maintain their place on this earth. Successful species establish and flourish in their niche, only to run again.

"Here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!". - *The Red Queen*.



*The images are taken from the internet



1.

CRITICALLY

2.



4.

CONSERVATION,
NEED OF THE
HOUR.

WE AS HUMANS HAVE
ENDANGERED THE EXISTENCE OF
A LARGE NUMBER OF SPECIES.



3.



WITH THE ONGOING
SIXTH MASS
EXTINCTION, WE MIGHT
NEVER GET THE CHANCE
TO MARVEL AT MANY
UNIQUE LIFE FORMS.

6.

SPECIES

ENDANGERED



5.

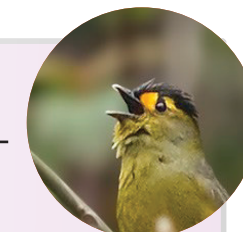
INDIA, A MULTITUDE
OF SUCH LIVING
LABYRINTHS,
HOSTS MUCH OF
THESE CRITICALLY
ENDANGERED
SPECIES.



7.

CRITICALLY ENDANGERED *species of* INDIA

1. Bugun liocichla (*Liocichla bugunorum*)



Described in 2006, it is the only bird species discovered after 1947. Endemic to India, it is found only in Eaglesnest Wildlife Sanctuary of Arunachal Pradesh. Rare in sighting, now there are hardly 20 pairs of these are left. They were given the name of Bugun tribe by the Astrophysicist, Raman Athreya, who had identified them.

Habitat: Shrublands mainly.

Threats: Logging and wood harvesting, habitat degradation due to roads and rail road's construction.



2. Resplendent Shrubfrog (*Raorchestes resplendens*)

Discovered in 2010, by scientist S.D. Biju and his team, Resplendent shrubfrog is a high altitude dwelling species. Just 23-28 mm in size, it is bright orange in colour with prominent glandular swellings on its body. Being a Raorchestes species, it undergoes direct development without the existence of a free-swimming larval stage. Sadly, less than 300 individuals are surviving today. It is endemic to the Eravikulam National Park in Kerala

Habitat: Ground dwelling, in moss-covered floors amidst bamboo vegetation.

Threats: Unknown, needs further research.

3. Bengal Florican (*Houbaropsis bengalensis*)



The world's rarest bustard, it is one of the three bustards native to the Indian subcontinent. A rather elusive bird, it is famous for the elaborate courtship displays performed by the males. Females are cryptically coloured and choose to lie low under the towering grasses. At present, less than 1000 individuals remain.

Habitat: Open tall grasslands of grass species like sugarcane and satintails.

Threats: Habitat loss and degradation due to intensive agriculture. Hunted for food and sport.



4. Hangul (*Cervus hanglu hanglu*)

The state animal of Jammu and Kashmir, Hangul or Kashmir stag is native to India and is extremely bashful of human presence. In the early 1900s, the population of this deer was around 3000-5000 but by 1970's the number drastically dwindled to just around 180 individuals and today, less than 150 individuals are surviving. Earlier thought to be a subspecies of the red deer, today IUCN recognizes it as a distinct species after genetic analyses.

Habitat: Dense riverine forests in high valleys and mountains

Threats: Poaching, overgrazing of their habitat by domestic livestock, habitat destruction.



5. Chalazodes Bubble-Nest Frog (*Roarchestes chalazodes*)

Rediscovered after almost 125 years, this Bubble nest frog was first described in 1874. With its curious eyes, this small arboreal frog has very few individuals reported from the Western Ghats, basically from 'Travancore' South India from the Cardamom Hills, where its population is steadily declining.

Habitat: Understory of moist tropical evergreen forest.

Threats: Conversion of natural forest to intensively cultivated areas and plantation



6. Peacock Tarantula (*Poecilotheria metallica*)

Endemic to India, it is heavily exploited through the exotic pet trades. Interestingly it was first discovered from a railway timber yard in Gooty, Andhra Pradesh, 100 km away from its native area, Eastern Ghats. First sighted in 1899, now it is being feared that it might be soon extinct. Iridescently blue coloured, the males are less showy than the females.

Habitat: Wooded mountain area of South India.

Threats: Illegal pet trade, deforestation and habitat fragmentation have increased the probability of extinction.



7. Pygmy hog (*Porcula salvania*)

The pygmy hog is a small suid, found only around Manas National Park of Assam. Because of its small size, short-legged and streamlined body, it is unlikely to be mistaken for any other pig. It is the only member of the genus Porcula with less than 250 individuals remaining today. Even after being critically endangered, they don't receive much conservation attention like the Bengal tiger or the one-horned rhinoceros. However, recent conservation efforts like captive breeding programmes to reintroduce them in the wild does seem promising.

Habitat: Tall dense grasslands.

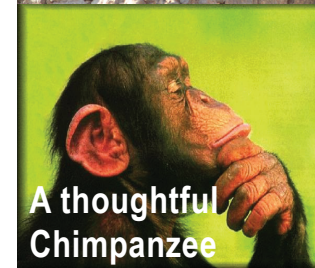
Threats: Habitat loss and degradation due to urban development, livestock grazing and intensive agriculture. Hunting.

ANIMAL

COGNITION



Spotted Owlet



A thoughtful Chimpanzee



Mansi with her squirrel

The most beautiful element of interaction with animals is realizing and experiencing the fact that they understand and they respond. Domestic or wild is no bar. What drives me towards animals is this unadulterated space of freshness and innocence, an inexplicable exchange. There exists this mutual child-like curiosity, yet comfort where you simply know that the other one is just as alive as you are, and we share this space. We are living beings; it is in our nature to communicate.

And very unlike our Ecology texts, I would rather believe that interaction among organisms exists in more spaces than just competition. I have felt it at a very subtle level.

There may be two ways of looking at the animal world.

One way pictures the entire system as a lethal one, with predators, prey, scavengers, each one trying to manipulate, deceive, strategize, hunt - encoding 'the survival of the fittest'.

The other way is to realize that all of this co-exists! All this chaos dwells in utter peace. There is beauty and not everything means harm. There is friendship. Animals are intelligent beings, much more than what we can perceive!

Sharing some personal anecdotes will allow for the existence of this cognitive relationship to be ascertained.



I've had a Kite visit me, when I needed to see it the most. We're friends, now. How fascinating, we could communicate! We could sense each other. Even the Owlet in my college has a playfully speculative nature. If you stare at it for long enough, it will soon start peeping and ultimately back stare at you with its large suspicious yellow eyes.

I am entranced by how animals can understand intentions!

There are numerous testimonials to Animal Intelligence. To quote one from a National Geographic photographer, T B Frost, I'd like to refer to his Instagram post which he captions as: "A juvenile saltwater crocodile and Melissa (friend) share a moment, each looking at the other in the eye. This lasted for several minutes, the crocodile seemingly as curious as Melissa!"; "...animals have so much to teach us and we have so much to learn".

This is felt at a spiritual level and is difficult to account for in scientific terms and papers. Nonetheless, we have many such papers to tell people about Animal Intelligence.

When in solitude, our inward eye reveals to us the honesty and selflessness of these precious creatures. Life is nurtured in every possible form on this planet. So much is to be discovered and to be exchanged. Thus in a literal sense, this is indeed a space for the living. A labyrinth of Life.

-Mansi Dhingra, FZH

GUESS THE ANIMAL!

The following pictures are trying to depict the names of some animals. Can you guess the correct names?

1.  -  +  =

2.  +  +  =

3.  +  +  =

4.  +  +  +  =

5.  +  +  =

6.  +  =



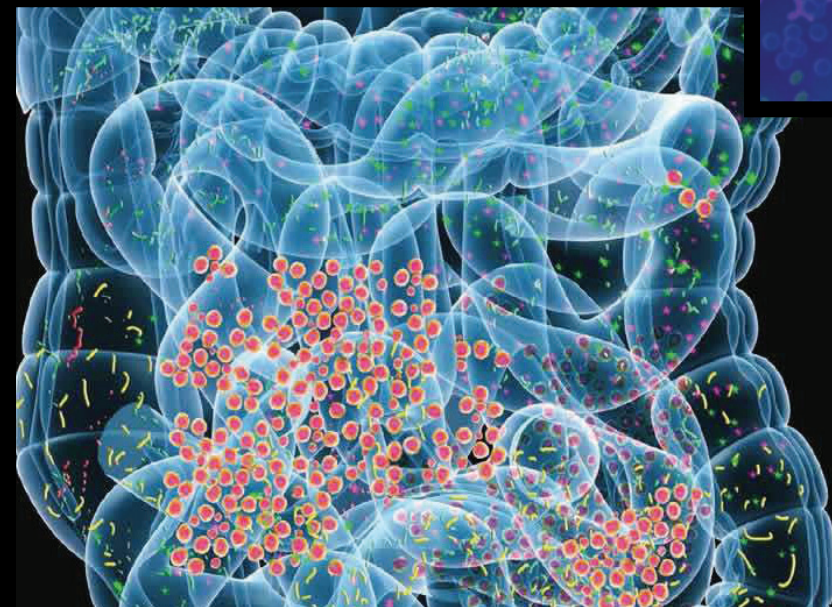
Scan this code for answers

Microscopia

Magnifica

MICROBIOTA AT WORK

-Vishal Singh, FZH



Ever since our existence, we have questioned about the relationship we have with each other and with our environment which comprises of various other organisms, some of which can be seen easily while others remain enwrapped in invisible coats. We never get drowsy, gazing and galloping the former but the latter remains quite unsung but they are all around us, indispensable and known as 'microorganisms'.

Microbiota, the ecological community of microorganisms, present in and on multicellular organisms that interact through commensalism, symbiosis and pathogenesis includes bacteria, protists, fungi and viruses which are essential for our very existence, so much so that they evolved with us.

Take the case of our medium of contact to the world-skin. The most diverse microorganisms live on our skin itself. These organism make up their own microhabitat on skin and protect us from skin infections, for example, *Bacillus subtilis* produces bacitracin on skin that prevents other harmful bacterial growth on

epidermis.

In the immune system, microbiota engage in 'cross-talk', exchanging the chemical signals, influencing immune reactivity and helping the system to recognize the harmful bacteria and killing them; and allowing good bacteria to function easily. They are easily transferred to a newborn through mother and indirectly through egg before birth and once inside they stimulate lymphoid tissue of gut to produce antibodies.

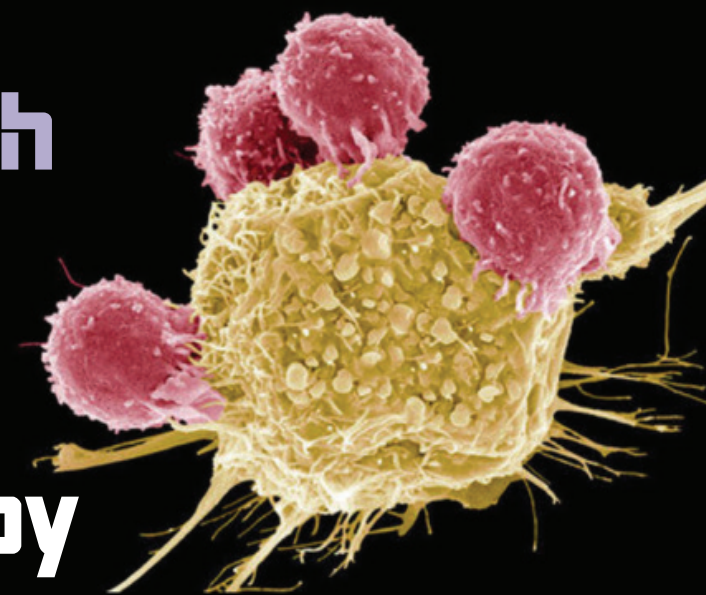
Gut microbiota contains around 1000 different species of bacteria belonging to genera like *Clostridium*, *Faecalibacterium* and *Bifidobacterium*. This gut microbiota starts developing at birth and are essential for proper functioning of our digestive system. Disruption of the gut microbiota population can lead to diseases like intestinal bowel disease (IBD), obesity and Crohn's disease. Intestinal microbiota also interacts with thyroid metabolism supporting the conversion of T3 into T4.

Wonder lies in the fact that successful human reproduction is possible due to existence of healthy community of microorganisms in the reproductive tracts. They aid in reproductive cycling, gametogenesis, pregnancy as well as delivering the newborn along with prevention of diseases like bacterial vaginosis and urinary tract infection.

Various research projects are employed to study the effects of these microorganisms on human health. Thus, microbiota are constantly and relentlessly working all the time, creating their own world inside our body facilitating normal functioning and interacting in various forms and at various levels.



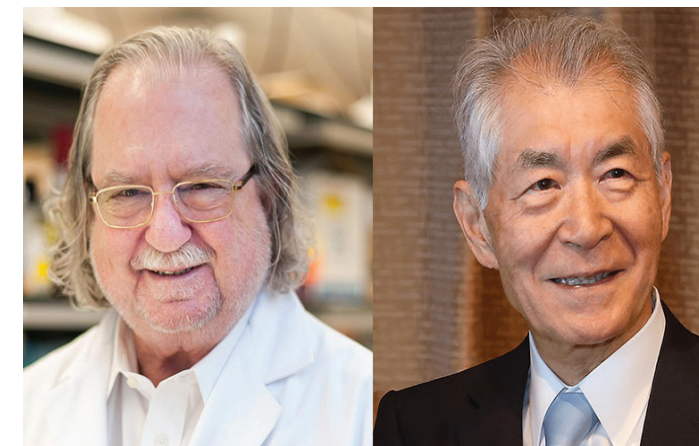
Breakthrough in Cancer Immunotherapy



-Somya Pathak, FZH

We come across moments in the history of discoveries which act as a benchmark for scientists. Unlocking the power of our own immune system to fight back against the war of cancer is a work which will be appreciated for decades surely.

Dr. James P. Allison of the University of Texas MD Anderson Cancer Center, and Dr. Tasuku Honjo of Kyoto University were jointly awarded the Nobel Prize 2018 in Physiology or Medicine for their work to fight against one of humanity's greatest health challenge, 'cancer' which kills millions of people every year.



James P. Allison and Tasuku Honjo, Nobel Prize awardees in Physiology or Medicine 2018

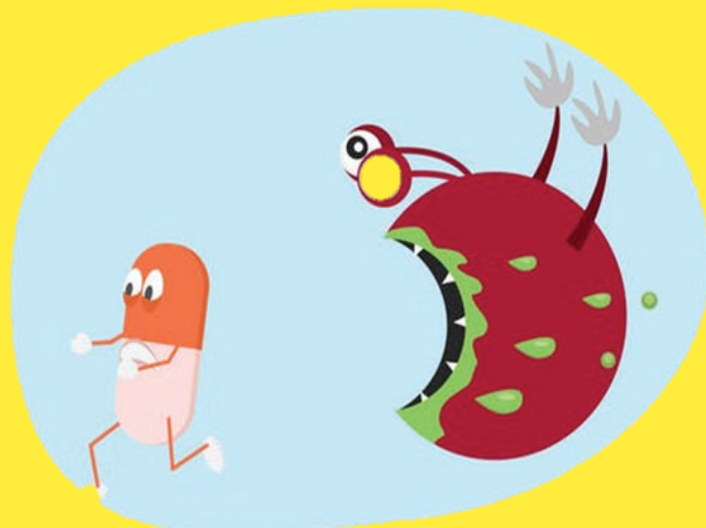
Our immune system works on the principle of discriminating between 'self' and 'non-self' so that any invading bacteria, virus or foreign particle can be attacked and eliminated. The key players in this are the T cells which are called as the soldiers of the immune system. They are the

ones which identify an invading cell by binding their receptors to it, thus making the immune system aware of the invaders to trigger a response. There are many proteins which help the immune system to attack the invading particles. On the other hand, there are some other proteins or brakes which act as inhibitors in the immune response. The balance of both these brakes and proteins are responsible for the proper functioning of immune system, thus acting as 'checkpoint system'.

Allison identified CTLA-4, a checkpoint protein present on the surface of T cells. When they interact with another protein on the surface of the tumor cells, they fit as a lock-and-key system making the T-cells fall into 'sleep mode', sending a message that the tumour cells are normal functioning cells and thus shutting the immune system from fighting against them. Similarly, Honjo gave way for PD-1, another T cell surface protein inhibiting the immune system from recognising cancer cells. So, Allison and Honjo developed a new type of drug called monoclonal antibodies which can block the pathway controlled by CTLA-4 and PD-1 proteins preventing them from switching off the T cells. This research has been useful for fighting a variety of advance cancers like lung, skin, kidney and lymphoma cancer.

This discovery is a revolutionary step for the future, where we hope for a life without the pain of chemotherapies and radiotherapies. Who knows, we might even discover that the immune system could be sufficient to fight cancer!

A SHAKESPEAREAN TALE OF MICROSCOPIC PROPRPTIONS



The story of antibiotic resistance eerily reminds one of a Shakespearean tragedy. It is a story of hopelessness, serendipity, human greed and decay and the bacterial resilience. History is doomed to repeat itself. It is bewildering how in this era of advanced medicine and surgery we are heading towards a time where even the smallest of incision may kill us.

Humans waged world wars to satisfy their pride and died en masse due to various infections. Surgery was very risky because the chance of acquiring an infection was very high.

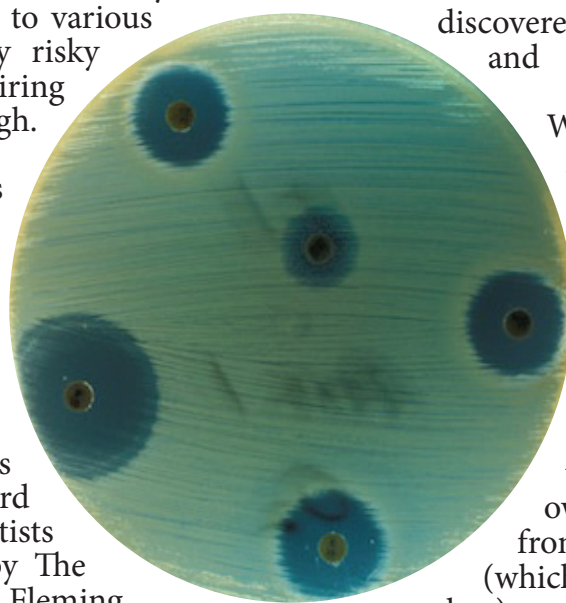
Thankfully, penicillin was discovered in 1928 out of pure serendipity in an unclean lab. Its discovery changed the world as we knew it. Suddenly lives were being saved from the onslaught of bacteria. But with the advent of antibiotics came its misuse, overuse and disregard of warning from scientists going as far back as 1945 by The Man himself, Sir Alexander Fleming.

Now, in the opinion of your humble narrator, these antibiotics are a devastatingly balancing force, for they wipe out the bacteria they can, but the resistant bacteria which they cannot, are free to divide and increase their numbers. Darwin must be dancing in whichever otherworldly place he inhabits now to nature's symphony!

How do rebellions spread? They are spread in the gutters and on the bottom of the bottles. They are spread through the bread and through the soil. They are spread through whichever

means available until the rebels are in enough numbers to come out in the open.

Synthesis of Ampicillin, a broad-spectrum antibiotic raised hopes but Ampicillin resistant bacteria were observed soon after. This very short time lapse between antibiotic release and resistance raised alarm bells in the scientific community. All over the world, strains of antibiotic resistant bacteria were being discovered. The response was to try and discover more antibiotics.



We now know that the rebellious resistant bacteria spread through horizontal gene transfer. The resistant genes are carried on plasmids, small circular DNA molecules which replicate independent of the chromosomal DNA. Plasmids can increase within the bacteria on their own, transfer themselves from one bacteria to another (which transcends species and class) and can even incorporate themselves in the chromosomal DNA.

The very first rebels faced sticks and stones, then iron rods and guns. But the rebellion doesn't die. The more antibiotics we use, more resistant genes develop. And when the resistant bacteria are enough in numbers, they initiate an open revolt, ultimately forming multiple-drug resistant bacteria or superbugs which threaten the beginning of a Macabre time.

-Rishabh Yadav, FZH

UNBOXING

PANDORA

AVATAR, a masterpiece by the amazing James Cameron never ceases to amaze me no matter how many times I watch it. What fascinates me the most about that movie are the Na'vi, the people inhabiting Pandora – a life form completely different yet somewhat similar to ours. Makes you wish if you could see them in real life. But sadly, it was just a figment of imagination. A new life form in this present age of extinction? This can never become a reality. Or can it?



According to a new study, scientists have found the biggest viruses known till date, namely the Pandora viruses that have not only opened up multiple avenues in the field of science but has also given rise to various new hypotheses, one of which even suggests towards a fourth domain of life. These viruses range from about one micron to a thousandth of a millimetre dwarfing the other viruses which range from about 50-100 nm in length. One of the most demarcating feature about this virus not only lies in its length but also in its genomic structure. It contains about 2,500 genes which exceeds the normal virus range of about 10-12 genes. Now this is where it gets interesting- from these 2500 genes, about 93% of it cannot be traced back to any known lineage in nature. In other words, they are completely alien to us. This serves as an evidence for many researchers for the "controversial existence of a fourth domain of life" in addition to archaea, eukaryota and bacteria. Now this raises another question: how can something so significant had

not been discovered till now? This was answered by the study's co-author Jean-Michel Claverie, a microbiologist at Aix-Marseille Université in France, who is part of a research team with microbiologist Chantal Abergel who explains "When people look into cells and when they see things that don't have the right dimension or don't have regular assets or geometries, they don't think of viruses—they think it's some kind of bacteria. When the scientists then try to cultivate these supposed bacteria in the laboratory and fail, it doesn't surprise them, since up to 60 percent of bacteria in the oceans can't be grown in the lab", hence owing to them remaining hidden for such a long time.

If the study proves to be true, we might not only observe a new life form but also this would change a lot of dynamics in the present classification system and evolution. Who knows, maybe Avatar might become a real life sequel to the ongoing movie of life on earth !

-Anushka Saxena, SZH



CURRENT AFFAIRS

1. The first mammal extinction due to human-induced climate change

On 19 February 2019, Australian government officially declared extinction of an endemic rodent species of Bramble Cay of the Great Barrier Reef - Bramble Cay melomys (*Melomys rubicola*). Reasons for extinction are increase in sea level and extreme weather events at Torres Strait Island Region. Discovered in 1845 by Europeans as the large rats and once abundant, this rodent was not reported since 2014 survey.



2. Your depression might be linked to your digestive bacteria

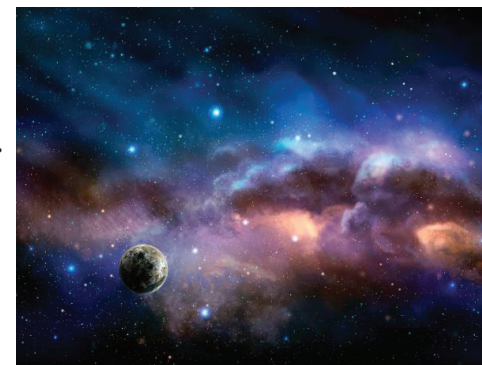
After a study on 500 types of gut bacterial genome, it was found that many of them produces compounds linked to a variety of mental processes and that people with low level of bacteria like *Coprococcus* and *Dialister* have high chances of depression.

3. Experimental and uncertain IVF

A female suffering from ovarian cancer was treated with taxol and was able to provide required environment to an embryo. This was done in Chennai where, the doctors took the right ovary of the female and implanted it under her skin where it was able to produce the ova. And thus with IVF the further procedure was done.

4. LOFAR reveals more than 300,000 galaxies

The universe is getting a lot bigger by the map of sky revealed by LOFAR telescope. It is working as the 'window of universe'. LOFAR (low frequency array) in the Paris Observatory uses radio astronomy for detecting radiations produced when massive celestial bodies interact.



-Divyanshi Soni, TZH

Sponsored by

LAKMÉ



His ten year old bones start freezing
Hair on his skin rise on cue,
The air, heavy with death,
Warn about the incoming calamity.

The old lament their bad luck,
Wishing they were dead,
Before death came itself, again,
On four legs and with a tail.

They sing folk songs with a burden,
The burden of a gravedigger.
They sing of hunger and death
Of rats and bamboos,
They sing of *Mautam*.

The bamboo gave him his home,
The bamboo gave him his toys,
The bamboo gave him food,
The bamboo gave them their independence,
The bamboo demands a price,
The bamboo will take his life.

The green thick stems become
Yellow straws with spikes,
These spikes shields death,
And they bid their time.
Till the forest unleashes hell,
All together, in a sinister symphony.

The bamboo dies, its job done.
It spends forty eight years
Giving love and care, and in one,
Only one year extracts a bloody price.

At first, he doesn't understand the fear.
They are just seeds, and they look like wheat.
But then the squeaking rodents come,
The table is set and the feast is ready,
Behind one's feast is another's hunger.

Rats, rats, rats abound,
As far as the eyes would go,
The ground is black,
Black is the water,
Black their future
And black their death.

They clear the forests
And they clear the fields
They clear their homes and
They clear their future.

They bring the plague,
They bring the snakes,
They die after ruining everything,
And they bring the vultures too.

He is lucky if he gets one meal a day,
His companions are dying like fleas,
Waiting to scavenge some bits,
After the rats have ended their onslaught.

-Rishabh Yadav, FZH

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प्र-कृति संरचना

वया में हूं,
 उन हवाओं के पंखों पर बैठी सुगंध में,
 हूं मैं वया,
 उस सूरज के नारंगी रंग में,

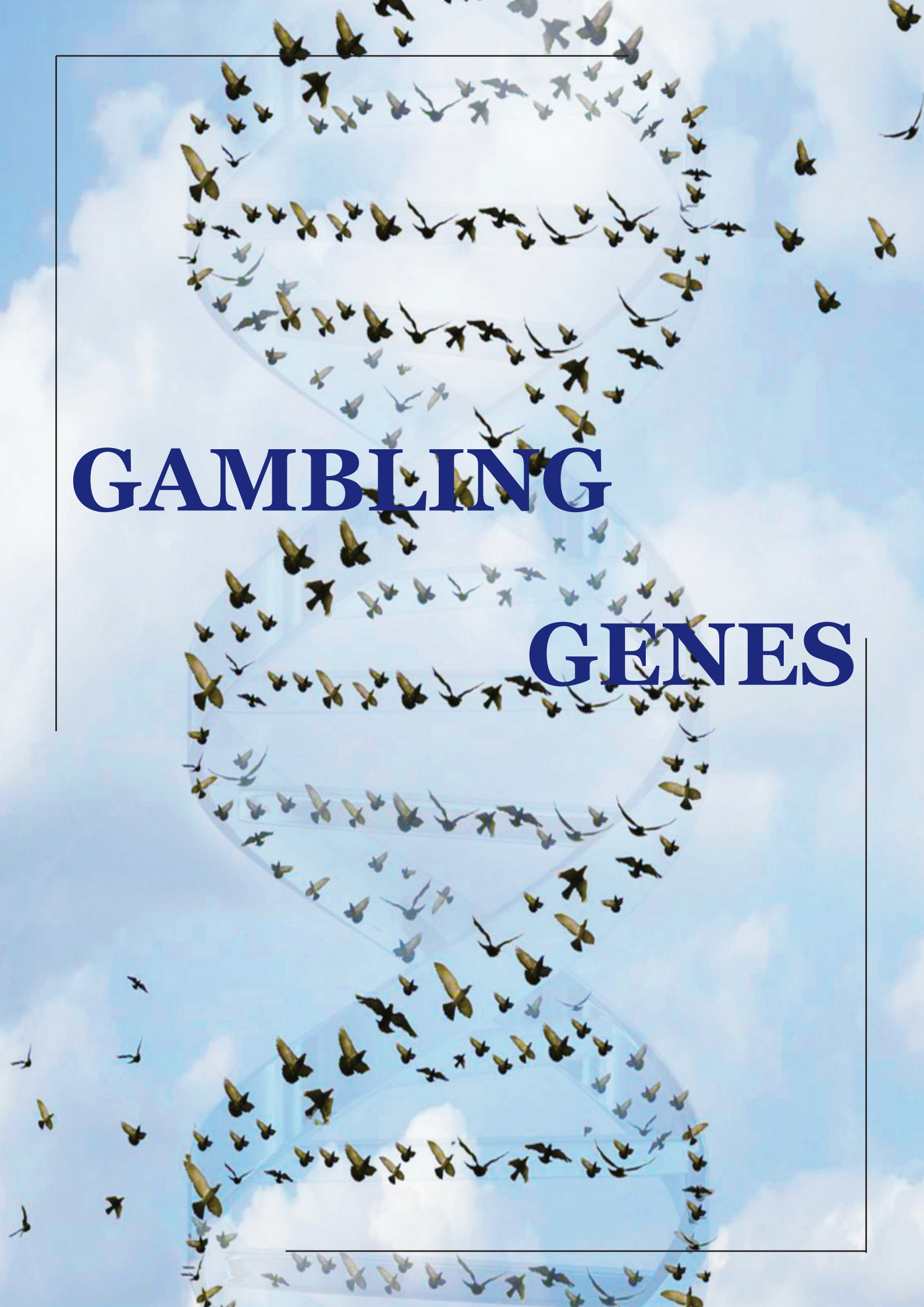
 कल तक मेरा अस्तित्व था वन
 मधुप की गुन-गुन में,
 नीलिमा के असंख्य जुनहाई, केकी और कीर के संवाद
 व उदाधि की गहराई में,

 समय बदला मैं रहा
 मेरा रूप ना रहा,
 काफी दिया, सुत ना लिया
 झेला और साझा पर गम ना किया,
 बालु उड़ा, परंतु गहराई छोड़ गया।

 आज मैं सुरंग-सुविधाएं सुहावनी
 छवियां की चित्र-गंध फैली मनभावनी,
 ये तो हैं उपसर्ग, प्रत्यय बताये नई कहानी।

 आज हूं तुम्हारे समक्ष उपस्थित, आज ही कर लो वाद,
 कल ना बचाया तो कहीं बन ना जाऊ किताबों में बनकर याद।

- दिव्यांशी सोनी



GAMBLING GENES

Three-Parent-Baby:

Can you have 3 biological parents?

-Twinkle Kathuria, SZH

As you must know, after fertilization, a zygote possesses nuclear DNA from both father and mother but the mitochondrial DNA is contributed by the mother only. The health of a woman's mitochondria, specifically her mtDNA decides the ability of an egg to be fertilized successfully. Mitochondrial diseases, a heterogenous group of diseases which can lead to premature death in infancy or childhood are caused by mutations in mtDNA.

To overcome these genetic defects in the embryo, the concept of three-parent-baby was introduced-a human offspring comprising of genetic material from one man (father) and two women (mother and a donor) produced by mitochondrial manipulation or replacement.

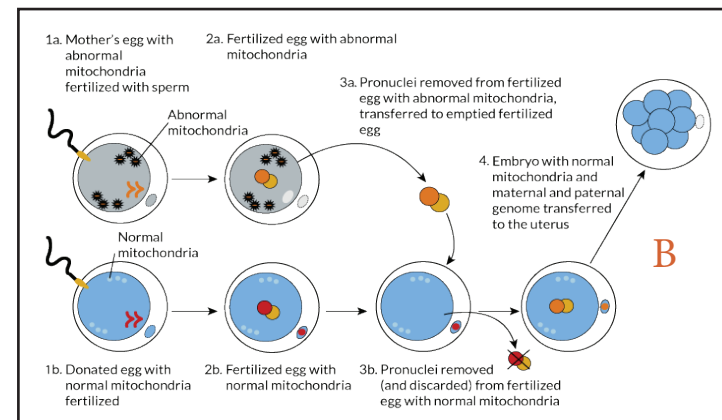
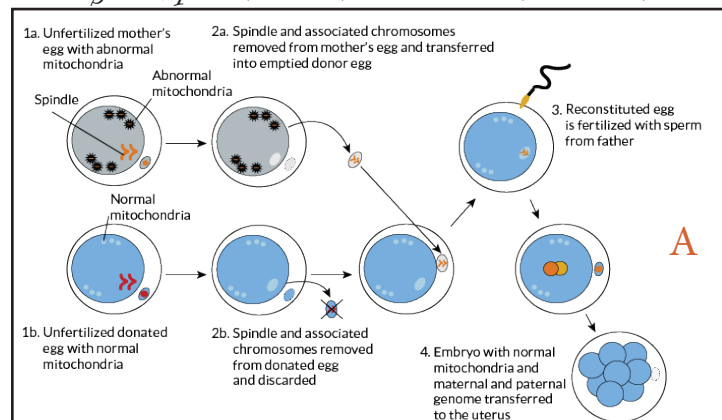
There are various methods for this technique, namely maternal spindle transfer and pronuclear transfer. Spindle transfer entails the removal of the spindle and its attached chromosomes from the donor's egg and insertion of the mother's spindle and chromosome into the cytoplasm of the donor's egg. The zygote formed thereafter the fertilization with the father's sperm is transferred to the mother's uterus for normal gestation. In pronuclear transfer, first a zygote is formed by the fertilization of the mother's egg and the father's sperm. The pronuclei (nuclei of the egg and sperm which have not fused yet) of the zygote are then removed and inserted into a fertilised donor egg that has

its own nucleus removed. The zygote now formed is implanted in the mother's uterus. The term, three-parent-baby can be misleading, because the child does not have an equal proportion of DNA from each parent. The major part of its DNA (the nuclear DNA) is from the mother and father but a small fraction of its DNA, the mtDNA is from another donor egg or third parent. This technique could help many women to overcome infertility and prevent transmission of maternal mitochondrial diseases to the offspring. Initial experiments on this method started almost 20 years ago.

One such baby was born in April 2016. The mother's mitochondria had a genetic defect that could cause Leigh syndrome, a fatal disorder. The mother did not suffer from this killer disease as most of her mitochondria worked properly. But this mutated mtDNA was passed on to two of her children who suffered from this disease and died early. She had also endured four miscarriages. Her third child was created using the three-parent-baby technique. He did not suffer from Leigh Syndrome and appeared to be completely healthy.

Even though these techniques still have several safety concerns, with escalating medical advancement, nothing seems impossible at present. Nonetheless there have been raised some ethical concerns, the scientific community questioning whether it's acceptable to manipulate human DNA in such a way!

Fig A: Spindle Transfer B: Pronuclear Transfer



*The images are taken from the internet

BIOLOGICAL DARK MATTER

- Akshanshi Gulani, FZH

The universe is full of astonishing things, from the largest celestial objects to the smallest microbes. Today, we have made some huge advances in genetics, to the point where the blueprints for making an organism, the DNA, has been sequenced for many species and we are quite close to uncover many secrets. But a lot of the genetic material is still a mystery to scientists.

The classical role of a gene is to produce proteins, which are essential for the functioning of cells. However, our genome also encodes genes that produce long non-coding RNA and DNA, whose functions are poorly understood. These non-coding RNA and DNA are termed biological dark matter. In the human genome, less than 2% DNA codes for proteins, the rest being one of the many examples of biological dark matter.

Biological dark matter may hold great importance in treating diseases. Recent research states that it may have a role to play in heart failure. A non-coding RNA called *Chaer*, activates genes which lead to a cascade process, ultimately leading to heart failure. When researchers eliminated *chaer* in mice that were similarly induced by high blood pressure, they observed that the animals were essentially protected from heart failure. Another recent research suggests that dark matter may contain genes important for brain development; and diseases such as the Alzheimer's may be caused by mutations in these non-coding genes. An experiment was conducted in which some non-coding genes were removed from mice and rodents. Both showed less number of brain cells and abnormal brain development and the rodents showed some abnormal patterns in behavior as well.

It is estimated that the difference between human and chimpanzee genomes is only 1 to 3%, while human and mouse share about 97.5% of their working DNA. These similarities suggest that not much has changed since we shared a common ancestor 100 million years ago and biological dark matter has been conserved for many years of evolution, suggesting it also has a role to play in survival of the species.

Biological dark matter also covers the world of microbes. With nearly 1 trillion species of microbes existing on earth and with our current understanding of microbes and their applications, there is no limit to what humans can achieve if the genomes of all the microbes are sequenced!

*The image is taken from the internet.

AGEING

*"In me she has drowned a young girl, and in me an old woman
Rises toward her day after day, like a terrible fish."*

Sylvia Plath's **Mirror** gives a vivid imagery of the dreadful feeling of growing old. Ageing, which is inevitable, can be defined as the collection of changes and processes that render human beings progressively more likely to die.

Over the years, several theories have been proposed to explain the process of ageing. According to the telomere theory of ageing proposed by A.M. Olovnikov in 1971, the end segments of the chromosomes, i.e., the telomeres are not fully copied. Therefore the chromosomes become shorter after each cell division and ultimately, the cell loses vital capacity and stops dividing.

The cells can divide only a finite number of times. A human cell, on an average, can divide upto 50 times. The number of times a cell divides before becoming senescent is known as Hayflick's limit. Therefore, ageing on a macroscopic level results from the accumulation of senescent cells with age.

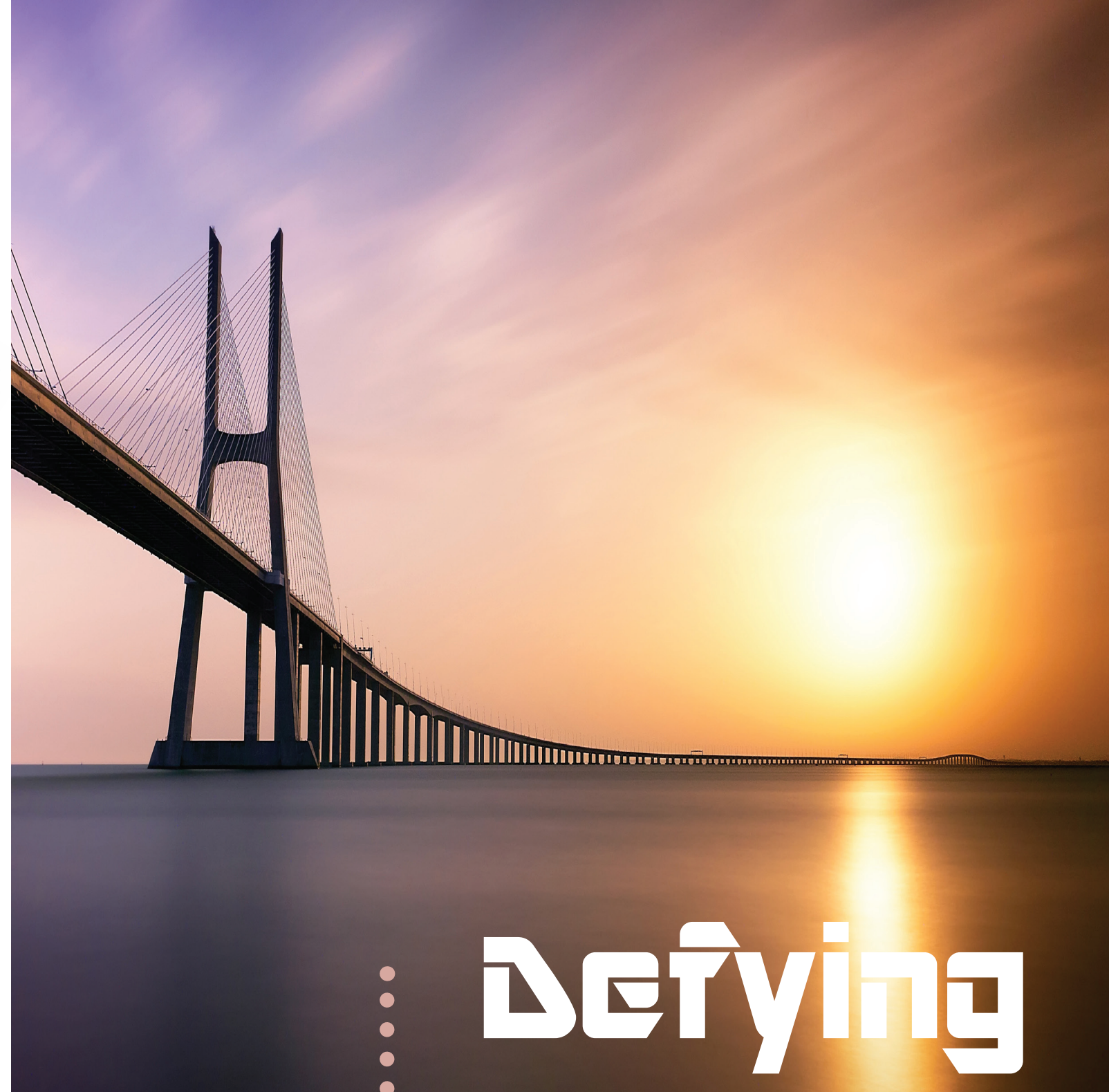
With the discovery of telomerase in 1985, the telomere theory was confirmed. Telomerase is a reverse transcriptase enzyme that adds hexameric repeats, TTAGGG, to chromosome ends, extending and maintaining the length of telomeres. Telomerase activity is absent in most of the normal human somatic cells due to the absence of expression of TERT (Telomerase reverse transcriptase) which is the catalytic protein component of the enzyme

complex. If TERT is expressed in cells that otherwise lack telomerase, these cells can become 'immortalized', e.g., the introduction of hTERT into normal fibroblasts and epithelial cells can lead to immortalisation.

However, certain animals do not undergo ageing processes. Planarian flatworms that reproduce asexually can have a limitless capacity of telomere regeneration. Lobsters do not age but are not immortal either. Their cells show telomerase activity which leads to longer lifespans and they usually die due to exhaustion during moulting. But what works for lobsters, may not work for humans. Overexpression of TERT can result in unregulated growth of cells resulting in formation of biologically immortal cells such as HeLa cells. However, microscopic immortality in this case does not result in macroscopic immortality as unregulated growth leads to formation of cancerous cells. Research suggests that reactivation of telomerase can be used in cell therapy, however, activation of telomerase can lead to development of cancerous cells.

Certain organisations, like the SENS Research Foundation aim to find methods to attain negligible mortality or reverse the effects of ageing. The process of ageing maybe an "unsolved problem" in biology (Medawar, 1952) but ageing is not necessarily negative because immortality would cause a whole new complication on earth.

-Ankita Saha, SZH



Defying Limits

*‘Contradiction
is the fingerprint
of a radical idea.
A Revolution is its
success’.*

BIOCENTRISM

REALITY ENDANGERED

Biocentrism is a new theory that says life creates time, space and the entire Universe; that the Universe arises from life, and not the other way round.

Until now, the Cosmos to us has been nothing more than a mixture of infinite atoms being shuffled and reshuffled according to the indifferent rules of nature. At one fine point, the conditions appear to be tailor-made to support life. With a reducing atmosphere and energy in the form of lightning, the Earth witnessed formation of complex organic molecules that slowly had the capability to self-replicate.

In this idea, life is composed of atoms at the molecular level. These atoms have properties.

The properties of the physical world are facets we try to measure. If everything in the Universe is of physical origin, we should be able to measure all of its properties. But we can't! Consider the wave-particle duality, as we understand it in Physics. It is the idea that a Quantum object can behave like a wave, but the wave disappears if you try to locate the object. Rational thought does not allow for the properties of matter to change as per our observation. Why should it matter to the object whether it is being observed or not?

Another example is Heisenberg's Uncertainty Principle, which says that we cannot measure the exact location and momentum of a particle simultaneously. Again, why should it matter to the particle what we decide to measure?

In Robert Lanza's words, "The answer is simple. It is because reality is a process that involves our consciousness."

Named one of TIME Magazine's 100 most Influential People, Robert Lanza has made extraordinary contributions to the Science world.

In his talk at the Science and Nonduality Conference 2010, he said that (With an understanding of biocentrism) it becomes clear why properties of space and time depend on the observer. Everything

we see around us is a construction happening in our mind from moment to moment. For instance, we see a blue sky out there. But the cells in your mind could be changed so that everything that is blue looks green or red; even do a little genetic engineering, so that everything that is red seems to make noise or vibrates".

Reflection over this concept highlights that the very nature of information is paradoxical. The distinction between observation and fact is inaccessible. Because as biological beings, information to us is what we observe, and what we observe is determined by our composition, our programming at the genetic level.

Among the many questions and contradictions raised by biocentrism, the question of quantitatively defining consciousness dominates all.

How can a few molecules of Carbon give rise to consciousness?

If all of nature is a piece of art, our consciousness the artist, how can two different living organisms coincide on identical observation? Does it imply that all other living creatures are also a construction of one's mind? The trail of questions is never ending and must remain so.

To end it on a very light note, it would not be wrong to say that the Origins of Life and its mysteries have persisted painfully long enough for centuries of scientific thought.

The goal for the coming generations seems to indeed verify Mankind's proximity to the truth, the very fact.

*"Time is not an absolute reality but an aspect of
our consciousness"*

- Robert Lanza

-Mansi Dhingra, FZH



THE CANCER CALLED CIVILIZATION

-By Vaibhav Sharma, FZH

Cancer is a formidable enemy. For decades humanity has struggled to find a firm footing against it. Lying under the myriad of symptoms there seems to be a complex play of gene expression—an orderly chaos. Mutation in pre-oncogenes, leading to uncontrolled cell division opens the Pandora's box of cancer types ranging from lung cancer, blood cancer, skin cancer...practically in every tissue of the body.

Even more intriguing than that is, how uncannily cancer's progress mirrors the rise of *Homo sapiens* on Earth. Cancer appears to be the ultimate payback from nature to us, in a language we understand quite well, unrelenting rapidness.

For centuries, we have lived at the expense of the natural environment. Ravaging forests, toppling mountains, deriving coal from deep within the earth, but often the consequences were faced by the next generation. Thus, we continued our rampage, undeterred.

By Geological time scale, approximately 6 million years ago humans diverged from the chimpanzee because of the accumulations of slight mutations over time. In the next 2.5 million years evolved the genus *Homo* in Africa. In subsequent centuries, the ancient humans spread all across the world developing into different races over time. 200,000 years ago came the protagonist of the story, *Homo sapiens* in East Africa. Language appeared 70,000 years ago that accelerated the advancement of an obscure hunter gatherer to the apex of food chain. In a small span of 20,000-40,000 years *Homo sapiens* had spread to all habitable places and effectively led to extinction of local flora and fauna, due to overexploitation, all this while flourishing as a colony, as a species. Unsurprisingly, they also drove all other members of genus *Homo* to extinction. Though, it is debatable if it was done purposefully. But the fact remains 12,000 years ago, *Homo sapiens omo* was the last survivor of genus *Homo*, and the story had just started. The first Agricultural Revolution established permanent settlements, domestication of animals and plants alike. Civilizations established around the major rivers, and flourished. Humans had begun to get localised.

The animal who slouched till now had learnt to race against time. Empires rose and fell, invention of money and paper, locomotive devices allowed us to spread to new places. Ships allowed us to reach uncharted territories. Eerily like malignant cancer cell enters the bloodstream. Thus, industrial revolution started one more cycle of expansion and wiping out of indigenous species, preferably subjugation of native humans too.

Cities grew like tumors, creating an intricate network of roads. Rivers were bent to supply clean water and carry the waste away. Natural resources depleted, ecosystem suffered, all large animals driven to the brink of extinction. Only survivors were us, the humans, domesticated animals and crop plants. It surely isn't a bright picture but one thing stands out, our success depends on only one factor, we react and adapt faster than other animals who took millions of years to adapt to their surroundings. Now suddenly we find a blockage in our path of unimpeded growth, Cancer. It starts out a single cell accumulating mutations that lead to uncontrolled division and ultimately, malignancy. Cancer is not a modern disease; it is our way of life and constant exposure to carcinogens that have made it increasingly common.

We have been running far ahead by evading the consequences of our atrocities against nature. Short response time has been our only advantage. Our first adversary that has not just matched, but outpaced us is cancer. Research labs have a difficult time to bridge the increasing chasm between cancer and the cure. And not just cancer, on a whole nature is catching up to us. Superbugs, a term slowly gaining importance, are resistant to most of our antibiotics. Latest addition to our armaments is teixobactin, discovered back in 2015.

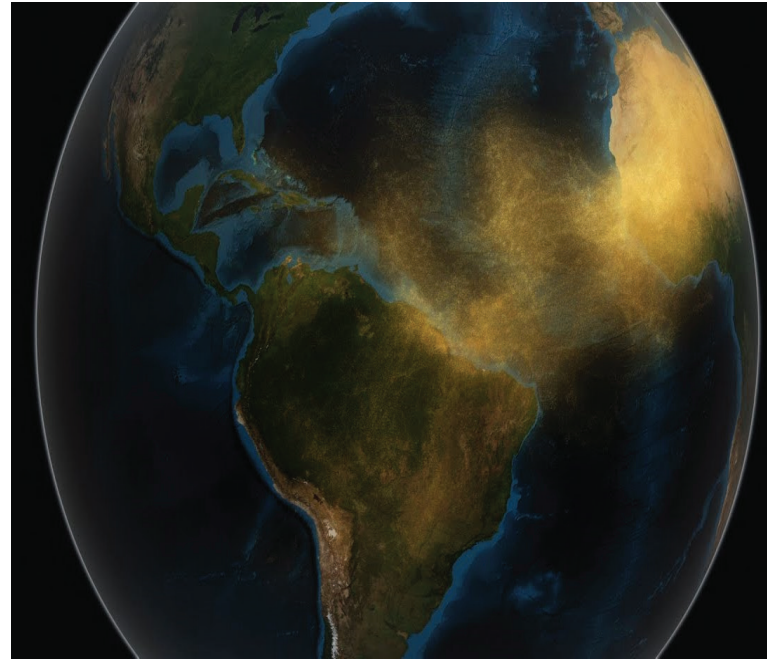
Cancer may be the first entity to use our advantage against us but is it the last?



Fig. Drawing parallels between highways and angiogenesis, we see both serve the purpose of easier transport and increasing accesibility

The great green Amazon Rainforests of South America and the glaring dry expanse of the Sahara desert of Africa are two distant worlds, 3000 miles apart separated by the Atlantic Ocean. But if someone looks carefully then they can see that the two Continents are actually like the pieces of a gigantic jigsaw puzzle and almost seem to fit next to each other. At first glance, the two regions appear to have no connection whatsoever, but there's more to what meets the eye.

The Amazon Rainforest receives on an average over 3000 mm of rainfall annually. Gallons and gallons of water washes away the soil and with it the precious nutrients too. But when so much of nutrients are being washed away then how is the Amazon not only surviving but also thriving? This question had bewildered scientists for quite some time, but when the answer ultimately came, it was not-so-obvious. The two continents-South America and Africa were at a time connected together but separated during the Continental Drift. Though they separated but still they didn't leave their connection.



Saharan dust reaching the Amazon

DISCONNECTED CONNECTION

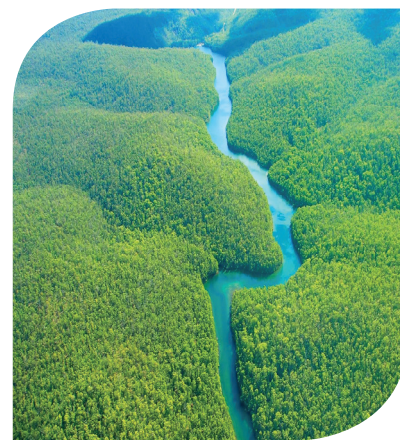
Scientists found that every year, the winds pick up about 182 million tonnes of dust (which is equivalent to about 689,290 truck loads) from the Sahara desert and this dust travels across the Atlantic ocean and around 28 million tonnes of this dust loaded with minerals and nutrients are dropped onto the Amazon basin. This is the secret of how the Amazon replenishes its lost nutrients.

This gives a perfect example of how strange and interconnected this little Blue planet which we call home is, you never know who or what is helping you in what tricky ways.

From the small phytoplankton to the large whales, from Mount Everest to the Mariana trench, everything is interlocked, disturbing one will have a domino effect and if one falls then we never know what's going to fall next.

This shows a similar relation as in human beings, no matter how far our siblings are but they still try to help us in every possible manner, same as in the case of the Amazon Rainforest and the Sahara desert.

Perhaps, the Earth can teach us that even the things that seem dead, can help nurture millions of life forms.



Amazon Rainforests



Sahara Desert

- Nirmegh Basu, FZH

A Mother's Losing Battle

- Stuti Kumari, SZH

Can you believe, babies are not even protected in the womb? It seems even a mother's womb, which acts as a well-insulated, natural shield does not guarantee complete safety of the fetus, notwithstanding the pain and measures a mother-to-be takes to fend off all dangers away from her yet unborn child.

No one can deny the harmful effects of air pollution but the question of whether or not human fetuses can be negatively affected by this pollution had remained unclear till now. Scientists have found the first evidence that the particles of air pollution travel through pregnant women's lungs and lodge in their placenta, an organ which develops in the uterus during pregnancy and acts as a medium through which nutrient uptake, exchange of gases and elimination of wastes take place between the mother's bloodstream and the fetus. Evidence of tiny particles of carbon released during burning of fossil fuels, which enters the mother's



bloodstream when she breathes polluted air, has been found in placentas.

A recent study analyzed the placenta of five women from London, who were non-smokers, did not have any pregnancy complications, and delivered healthy babies. This particular study looked at the placenta macrophages, cells of the immune system which engulf harmful particles like bacteria & cellular debris. Of the 3,500 placenta macrophages collected, 60 cells contained 72 small black regions that the researchers determined to be small carbon particles. It is not clear whether the particles could also move across the fetus, but evidence suggests that it is indeed possible. The particles do not need to get into the baby's body to have an adverse effect, because if they have an effect on placenta, this will have a direct impact on fetus too. This is supported by the fact that previous studies have shown air pollution to significantly increase the risk of premature births and low birth weight leading to lifelong damage to health. Did you ever imagine that air pollution might have affected you even before you were born?





Earth ohhh! Earth,
U were like a dearth...

You have a soft and hot crust
Just like cheese pizza burst...

You have a blue ocean and blue blue sky
In which I can swim and I can fly...

You have green grass and brown soil
Which gives us oxygen and oil...

You have Ozone layer and cloud cover
Ergo you are a species lover...

You have a magnetic shield
Which protects us from solar yield...

You protect the life in your room
Just like a mother protects the child in her womb...

You raised a Life that is so beautiful
And I am a part of it, for which I am grateful...

You have humans which is your creation
That are the hallmarks of evolution...

- Kartikey Saxena
SZH

RANK HOLDERS

III YEAR

1ST



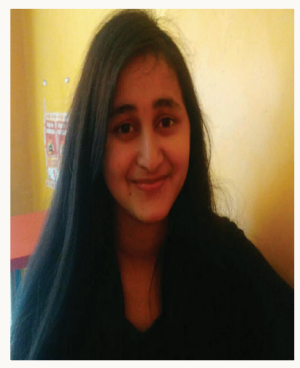
ANANYA BANERJEE

2ND



URJA KALYANI

2ND



SAIYAMI BHARDWAJ

3RD



TARUNA VERMA

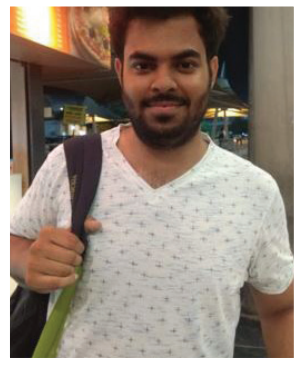
II YEAR

1ST



WASIMA SULTANA

2ND



ANURAG JAGLAN

3RD



RIYA SINGLA

I YEAR

1ST



ANKITA SAHA

2ND



PRIYAMVADA SINGH

3RD



AASTHA SAINI

E.C.A. ACHIEVERS

61

NIKITA GOLAYA, TZH
Treasurer of Effulgence
Member of Verbum



KHALID BASHIR, TZH
Central Councillor of College



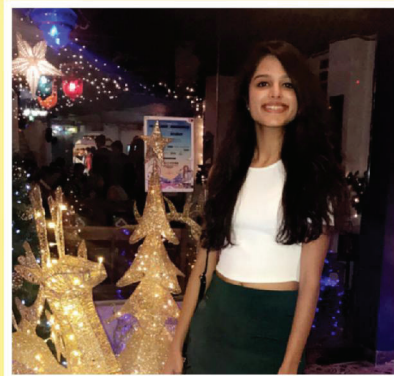
SAHIL MOTA, TZH
Member of Anubhuti



SHIKHA MOHINI, TZH
Joint Secretary of Enactus



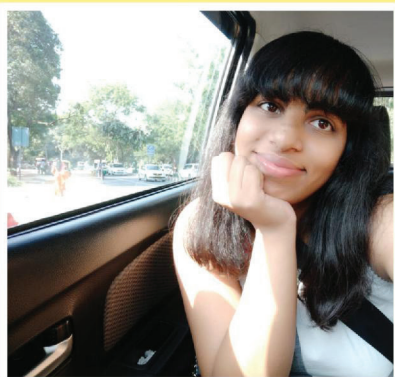
APOORVA SODHI, TZH
Convenor of Nritya



A. THARANIRAKSHITA, TZH
Member of Alaap



HARSHITA RUPANI, SZH
Member of Verbum



SAKSHAM SETHIA, SZH
Vice President of Verbum



SHRADHA PANDEY, SZH
Member of Nrityangana



SHRIYA BHATTACHARYA, SZH
Member of Badminton Team



AASTHA SAINI, SZH
Member of Leonci



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ANKITA SAHA, SZH
Member of Leonci



SAPTARSHI JANA, SZH
Member of Debating society



KARTIKEY SAXENA, SZH
Petrichor club volunteer
Hindi debating society volunteer



TWINKLE KATHURIA, SZH
Member of Nrityangana



BHAWNA YADAV, SZH
Member of Women Development Cell



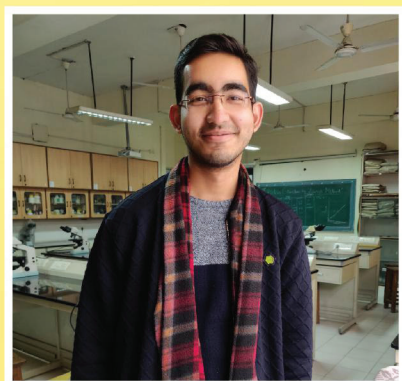
AJITA MISHRA, SZH
Member of Hindi Debating Society



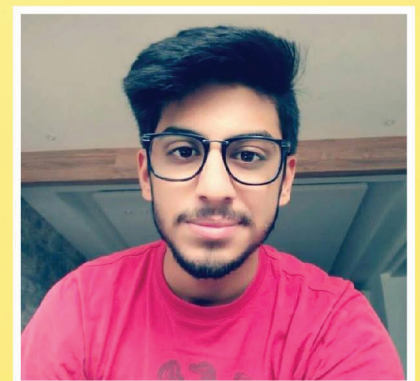
AKSHANSHI GULANI, FZH
Member of Leonci



VAIBHAV SHARMA, FZH
Member of Petrchor



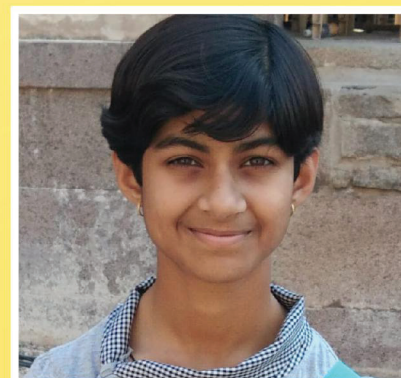
NIKHIL ZUTSHI, SZH
Member of FAA



AMIT BHATT, FZH
Member of Debating Society



AKSHITA KHOSLA, FZH
Member of Placement Cell
Member of Debating Society





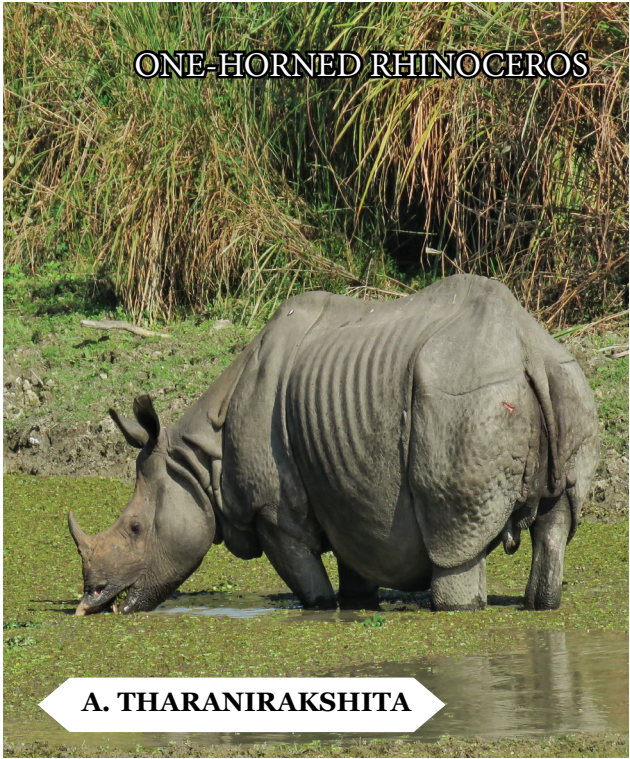
ASIATIC ELEPHANT

SWASTIK PRITAM



INDIAN FOREST COBRA
(BLACK MORPH)

SWASTIK PRITAM



ONE-HORNED RHINOCEROS

A. THARANIRAKSHITA



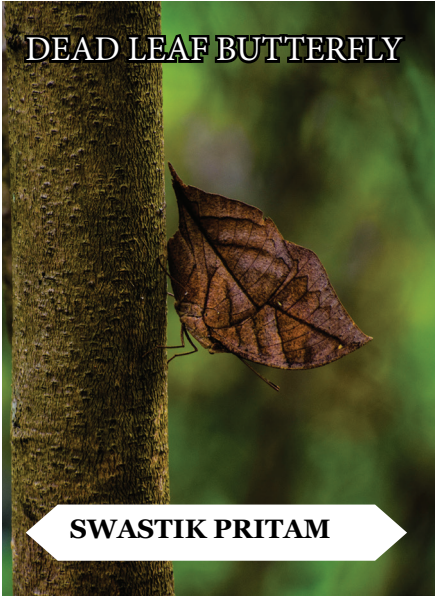
RED LACEWING

A. THARANIRAKSHITA



LARGE CABBAGE WHITE
CATERPILAR

NIRMEGH BASU



DEAD LEAF BUTTERFLY

SWASTIK PRITAM



DRAGON FLY

JASSIKA GUPTA



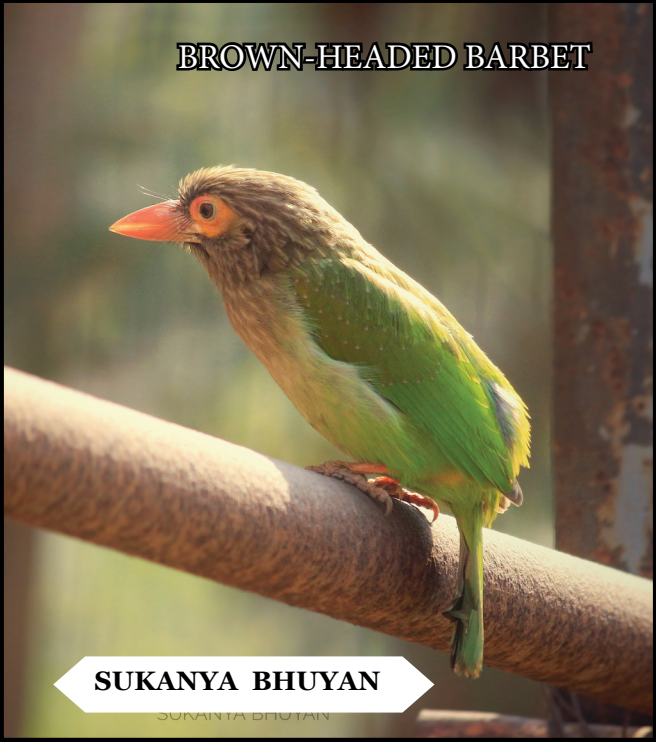
ROSE-RINGED PARAKEET

SUKANYA BHUYAN



INDIAN TORTOISESHELL CATERPILAR

ANURAG JAGLAN



BROWN-HEADED BARBET

SUKANYA BHUYAN



RHESUS MACAQUE

SOUMYA MALICK

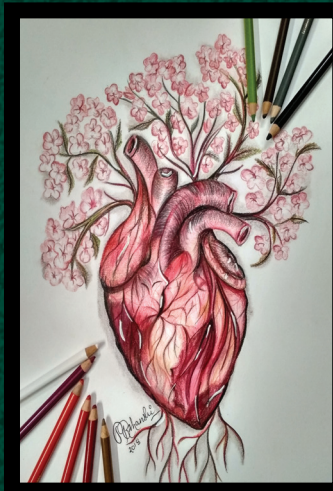


HIMALAYAN BLUE WHISTLING THRUSH

SOUMYA MALICK

YOUNG ZOOLOGISTS ON

THE
MOVE



Sakura
of the
Human
Body

- Akshanshi
Gulani



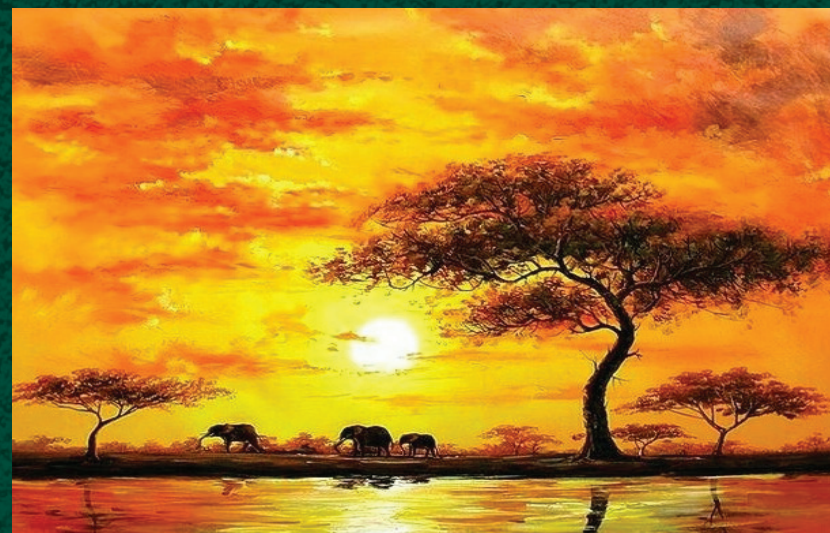
*The Milky Way
from Earth*

- Akshanshi
Gulani



**TIMES
FROM
TIFFANY**

-Nirmegh
Basu



Surreal
Sunsets...

- Wasima Sultana



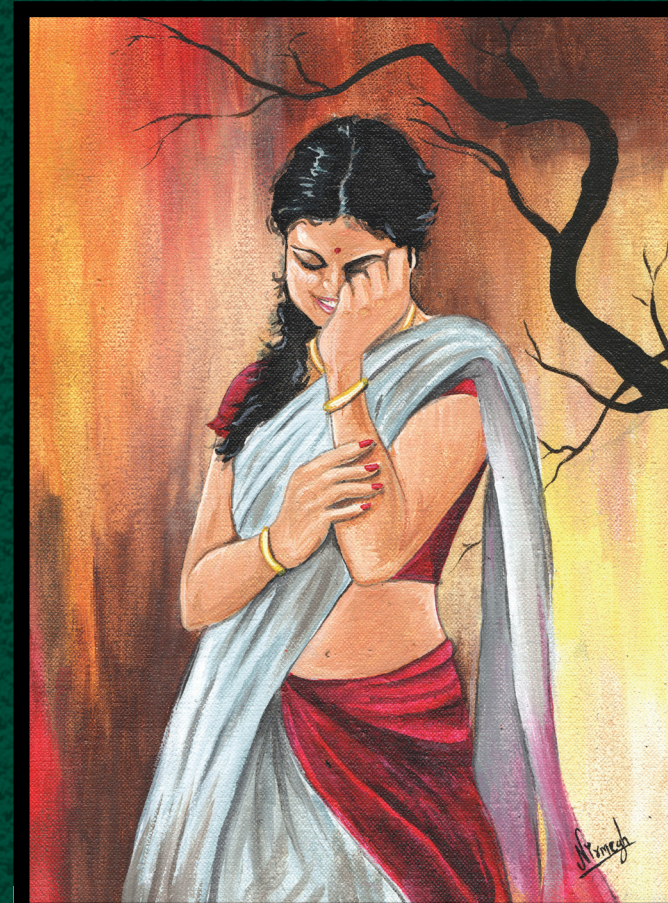
A
lone
walk
among
the
colours

- Mansi Dhingra



GRIT AND GRACE

- Nirmegh Basu



*She was a
Queen
from a
Movie Scene...*

-Nirmegh Basu



Stallion in Style

- Ankita Saha



Pride in those eyes

- Mansi Dhingra

**The
OWL
service**

- Jassika Gupta



EVOLVERE
THE ZOOLOGICAL SOCIETY OF SVC
PRESENTS

A LECTURE BY
ROHAN CHAKRAVARTY

THE FOUNDER OF GREEN HUMOUR
AND A GREAT WILDLIFE CARTOONIST

10 AM TO 11 AM
12 OCT 2018
ROOM 158

FOR FURTHER DETAILS CONTACT
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HARSHITA RUPANI

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presents

INTO THE WILD

Online wildlife photography competition where we wish to see how beautifully you capture wildlife in the frame.

Closing date for entries- 9th Oct, 2018

Send email entries to- photography.evolvere@gmail.com
Email must include-
❖ 2 pictures- each with caption
❖ Name, course, year, contact no.

NOTE: • Only basic editing allowed
• Photographs should have proper exif details
• Watermarks not allowed

WINNER POSTER BY SHALINI PANWAR

EVOLVERE
THE ZOOLOGICAL SOCIETY OF SVC
ORGANISES

HEALTH CAMP

IN ASSOCIATION WITH
MAX HEALTHCARE

BLOOD PRESSURE TEST
SUGAR TEST
ECG TEST
EYE CHECK UP
CONSULTATION WITH DIETICIAN AND CARDIOLOGIST

OCTOBER 12, 2018

HARSHITA RUPANI
PRESIDENT OF EVOLVERE

EVOLVERE
THE ZOOLOGICAL SOCIETY, S.U.C.
presents

ANIMAL FACE PAINTING

OCTOBER 12, 2018
FRONT LAWN

Text placeholder
Make a clan of 2-3!!
Get yourself registered on our Facebook page-
<https://www.facebook.com/evolvere.phoenix/>
Party hard with cash prize of.....!

further details contact- 7210693623
Swastik Pritam, President, Evolvere), 747998623 (Ishita, TZH)

ANURAG JAGLAN

EVOLVERE
THE ZOOLOGICAL SOCIETY, SVC.

Exciting Prizes to win

THEME: WILDLIFE

PAINT THE WILD: FACE PAINTING COMPETITION.

SWASTIK PRITAM

EVOLVERE
THE ZOOLOGICAL SOCIETY OF SVC
PRESENTS

A LECTURE BY
ROHAN CHAKRAVARTY
A RENOWNED WILDLIFE CARTOONIST
AND FOUNDER OF GREEN HUMOUR

Date: 12 Oct 2018
Time: 10am to 11am
Venue: Room 158

FOR MORE DETAILS, CONTACT
HARSHITA RUPANI

EVOLVERE
THE ZOOLOGICAL SOCIETY
presents

ANNUAL FEST 2K18

EVENTS (10 AM ONWARDS)

Lecture by **Rohan Chakravarty** (Famous Wildlife Cartoonist) - Room 158
Health Camp by **MAX HEALTHCARE** - Foyer and Medical Room
INTO THE WILD-Online Photography Competition - Room 158
First Aid : Workshop For Animal Lovers by **DR. RT Sharma** - Room 158
The Wild Wisdom Quiz- **Wildlife Quiz** - Room 158
Paint The Wild- **Face Painting Competition** - Front Lawn

ANURAG JAGLAN

DIGITAL POSTERS

HANDMADE POSTERS

EVOLVERE
The Zoological Society, SVC
presents

THEME: WILDLIFE

PAINT THE WILD

FACE PAINTING COMPETITION

DATE-12 October
VENUE- Front Lawn

For more info
ALICE SUBBA

EVOLVERE
THE ZOOLOGICAL SOCIETY OF SVC,

LECTURE BY:
FAMOUS WILDLIFE CARTOONIST AND FOUNDER OF GREEN HUMOUR.
ROHAN CHAKRAVARTY
VENUE - room 158 TIME - 10:00-11:00 am

QUIZ [WILD WISDOM QUIZ]
TEAM OF 2-3 PARTICIPANTS
VENUE- ROOM 158 TIME- 1:00-3:00 PM
PRIZE -

HEALTH CAMP BY MAX HEALTHCARE, SAKET
Include following tests -
• Blood pressure test
• Sugar test
• ECG
• Consultation with cardiologist
• Eye checkup
VENUE: FOYER AND MEDICAL ROOM
TIME: 10:00 am - 4:00 pm

THE WILD - ONLINE PHOTOGRAPHY COMPETITION
RESULT DECLARATION
VENUE - ROOM 158
TIME - 11:00 am

FACE PAINTING
THEME - WILDLIFE
2-3 participants in one team
VENUE - Front lawn TIME- 1:00-3:00 pm
PRIZE -

FIRST AID : WORKSHOP FOR ANIMAL LOVERS BY
MR. RT SHARMA
(President - PAWS INDIA)
VENUE- ROOM 158 TIME- 11:30 - 12:30 pm

KANINIKKA SOLANKI

EVOLVERE
The Zoological Society
PRESENTS

Cartoons In Conservation Communication

THEME: WILDLIFE

PAINT THE WILD: FACE PAINTING COMPETITION.

By- **ROHAN CHAKRAVARTY**

DATE- 12th October
VENUE- 158
TIME- 10:00 - 11:00 am

For more info
Contact- **Swastik Pritam**
President, Evolvere
7210693623

AASTHA SAINI

EVOLVERE
The Zoological Society, SVC
presents

THEME: WILDLIFE

PAINT THE WILD: FACE PAINTING COMPETITION.

DATE: 12th October
VENUE: Front

For more information
Contact- **Swastik Pritam**
President, Evolvere
7210693623

ALICE SUBBA

THE ANNUAL FEST 2K18 EVENTS

1. LECTURE BY ROHAN CHAKRAVARTY (FAMOUS WILDLIFE CARTOONIST AND FOUNDER OF GREEN HUMOUR) (10:00 am - 11:00 am, Room 158)
2. HEALTH CAMP BY MAX HEALTHCARE, SAKET (10:00 am - 4:00 pm, Foyer and Medical Room)
3. RESULT DECLARATION OF 2018 THE WILD ONLINE PHOTOGRAPHY COMPETITION (11:00 am, Room 158)
4. FIRST AID : WORKSHOP FOR ANIMAL LOVERS BY MR. RT SHARMA, (PRESIDENT - PAWS INDIA) (11:30 am - 12:30 pm, Room 158)
5. THE WILD WISDOM QUIZ (1:00 pm - 3:00 pm, Room 158)
6. PAINT THE WILD : FACE PAINTING COMPETITION (1:00 pm - 3:00 pm, Front Lawn)

AKSHANSHI GULANI

EVOLVERE
THE ZOOLOGICAL SOCIETY OF SVC
presents

THE WILD WISDOM
Wildlife Quiz

DATE: 12 Oct 2018
TIME: 11:30 am - 12:30 pm
VENUE: Room 158

AKSHANSHI GULANI

EVOLVERE
THE ZOOLOGICAL SOCIETY
presents

FIRST AID + WORKSHOP FOR ANIMAL LOVERS

by **MR. RT SHARMA**
President - PAWS INDIA

DATE: 12 Oct 18
TIME: 11:30 am - 12:30 pm
VENUE: Room 158

MEHAK PANDITA

EVOLVERE
THE ZOOLOGICAL SOCIETY
PRESENTS

"Into The Wild"
Online Photography Competition
THEME: WILDLIFE

PLEASE SEND Email Entries To:
photography.evolvere@gmail.com
Who The Winner Details:
2 Pictures Each With Caption
Name, Course, Year, Contact No.
Notes:
• Only Basic Editing Allowed
• Photos Should Have Proper exif Details
• Watermarks Not Allowed

WINNER POSTER BY **NIRMEGH BASU**

EVOLVERE
THE ZOOLOGICAL SOCIETY, SVC
PRESENTS

INTO THE WILD

Online Photography Competition
THEME: WILDLIFE

Email Entries To- photography.evolvere@gmail.com
Which Must Enclose
❖ 2 Pictures Each With Caption
❖ Name, Course, Year, Contact No.

NOTE:
• Only Basic Editing Allowed
• Photos Should Have Proper exif Details
• Watermarks Not Allowed

Deadline: 9 Oct 2018

For Further Details Contact
Swastik Pritam, President, Evolvere, 7210693623

NIRMEGH BASU



2K
FAREWELL
18



A photograph of two women standing behind a wooden podium decorated with orange and yellow marigold garlands. The woman on the left, wearing glasses and a yellow top, is speaking into a microphone and holding a book. The woman on the right, wearing a blue top with a green and yellow patterned neckline, is smiling and looking down at the book. The background is a plain wall with some vertical wooden elements.



A circular rangoli design on a dark floor. The central motif consists of two red, rounded figures with smiling faces, holding hands. They are positioned on a light blue circular background. Surrounding this central area are various colorful patterns, including a yellow crescent moon, a red star, and a yellow crescent moon. The entire design is enclosed within a circular border made of small, colorful dots. Several small, lit candles are placed around the perimeter of the rangoli, creating a warm, glowing effect.



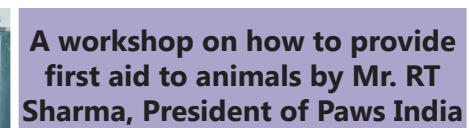
A wide-angle photograph of a large lecture hall filled with students and faculty members. They are seated in rows of wooden desks, facing towards the front of the room. The audience is diverse in age and appearance, with many individuals looking towards the front. The room has a high ceiling with several ceiling fans and bright windows on the right side, allowing natural light to enter. The overall atmosphere is one of a formal academic setting.



"Cartoons in Conservation Communication" by Rohan Chakrabarty, founder of Green Humour



Health Camp



Face Painting Competition



Photography Competition



Wildlife Quiz



Dhikala ki maggi!



Safari time!



Deep into Corbett...

The wind blowing on the face with a touch of warmth on the cheek, standing on the gypsy, looking into the canopy. **Mystical...**



When in Bailpurno

11TH FEB'19



The **Majestic** beast we saw!



Swastik Pritam

Memorable Days...



Sheer luck!

Conservation strategies



The camera trap



Interactive lectures



Transsect Trainings



Our love for Nature and Wildlife has blossomed early

Gypsy love...



Back in Ramnagar...off to Delhi



A Trip to GHNP and Manali

This academic year we had an educational trip to the Great Himalayan National Park, which can be explored only on foot. So, off we went, trekking on the rugged terrains of the park, with songbirds chirping in the background and fresh air surrounding us. We could hear the Chhoie waterfall, not far away. Housing beautiful birds like the great barbet, yellow-billed blue magpie, Himalayan whistling thrush and the rare western tragopan along with magnificent mammals like Himalayan black bear, Himalayan musk deer and the elusive snow leopard, GHNP was indeed a remarkable experience!

But our travel tale does not end here. We also visited Rohtang Pass and Solang Valley. Rohtang, with its snow-capped mountains was a picturesque view while Solang Valley offered various adventure sports like paragliding, ATV rides, bungee jumping and cable cars. Later, we wandered around on the streets of Mall Road of Manali. While returning from there, we also rafted for the first time. It was a thrilling and glorious ride.



28th Oct - 1st Nov '18



RESEARCH AT THE DEPARTMENT OF ZOOLOGY

The Department of Zoology has been always progressing forward in the field of scientific research. Our faculty alongside quality academics also have the zeal for research. Juggling between classes and their labs, our professors have left no stoned unturned to make a mark in respective fields. Painting further, many enthusiastic students are also a part of this. Established in 1974, the department hasn't looked back and aims at achieving the highest potential.

Awards

Dr. Mansi Verma was the recipient of Best Oral Presentation award in Indo-US colloquium at University of Delhi in association with Loyola University Stritch School of Medicine, USA in 2018.

Dr. Richa Mishra was interviewed for the Science & Technology section of the national newspaper "The Hindu" in recognition of the first author research publication dated April 14, 2018 titled "How gut bacteria affect immunity".

Dr. Riyaz Bakshi presented a paper in the National interdisciplinary Symposium on Recent Advances in Parkinson's Disease to be held on 16 February 2019 organised by department of physiology, Maulana Azad Medical College.

Publications

Dr. P. Jayaraj has published a paper alongside **Dr. Rajendra Phartyal** and **Dr. Anita Verma** on "Immunohistochemical evaluation of stress-responsive protein sestrin2 and its correlation with p53 mutational status in eyelid sebaceous gland carcinoma" in the British Journal of Ophthalmology in 2018.

Dr. Mansi Verma has two paper publications, one in 2018 titled "From dengue to Zika: the wide spread of mosquito-borne arboviruses" in the Journal European Journal of Clinical Microbiology & Infectious Diseases and another a more recent one in 2019, "Highly conserved epitopes of DENV structural and non-structural proteins: Candidates for universal vaccine targets" published in the Journal Gene.

Dr. Richa Mishra has recently got a paper published in the Journal of Bacteriology, "Tuning the Mycobacterium tuberculosis alternative sigma factor SigF through the multidomain regulator Rv1364c and osmosensory kinase, protein kinase D" for the year 2019.

Extracurriculars

Dr. Om Prakash and **Dr. Preeti Khandelwal** won 1st prizes in Lemon and Spoon Race under Men and Women categories respectively.

Workshops organized

Dr. Vartika Mathur (Convenor) organised a three day Indo-US Symposium on Allergy and Asthma, a collaboration of Department of Pulmonary Medicine and Sleep Disorders, AIIMS, Sri Venkateswara College, University of Delhi and Northwestern University, Chicago, U.S.A.

Dr. Mansi Verma and **Dr. Rajendra Phartyal** (members) organized a Faculty Development Program cum Workshop on Climate across the Curriculum: Resources for integrating climate topics in discipline-specific teaching, a collaboration of Sri Venkateswara College, University of Delhi with IISER Pune from October 13th -14th, 2018.

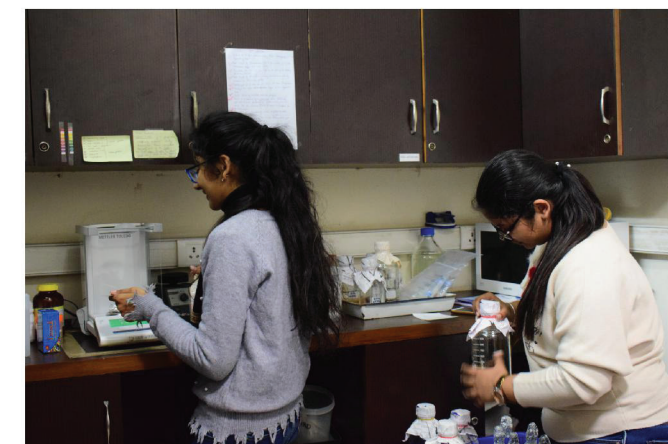
Dr. Aarti Seherawat organized a workshop on "Personal Hygiene Education" for girls on 31st July 2018 at The Indian Heights School.

Teacher-Student Interactions

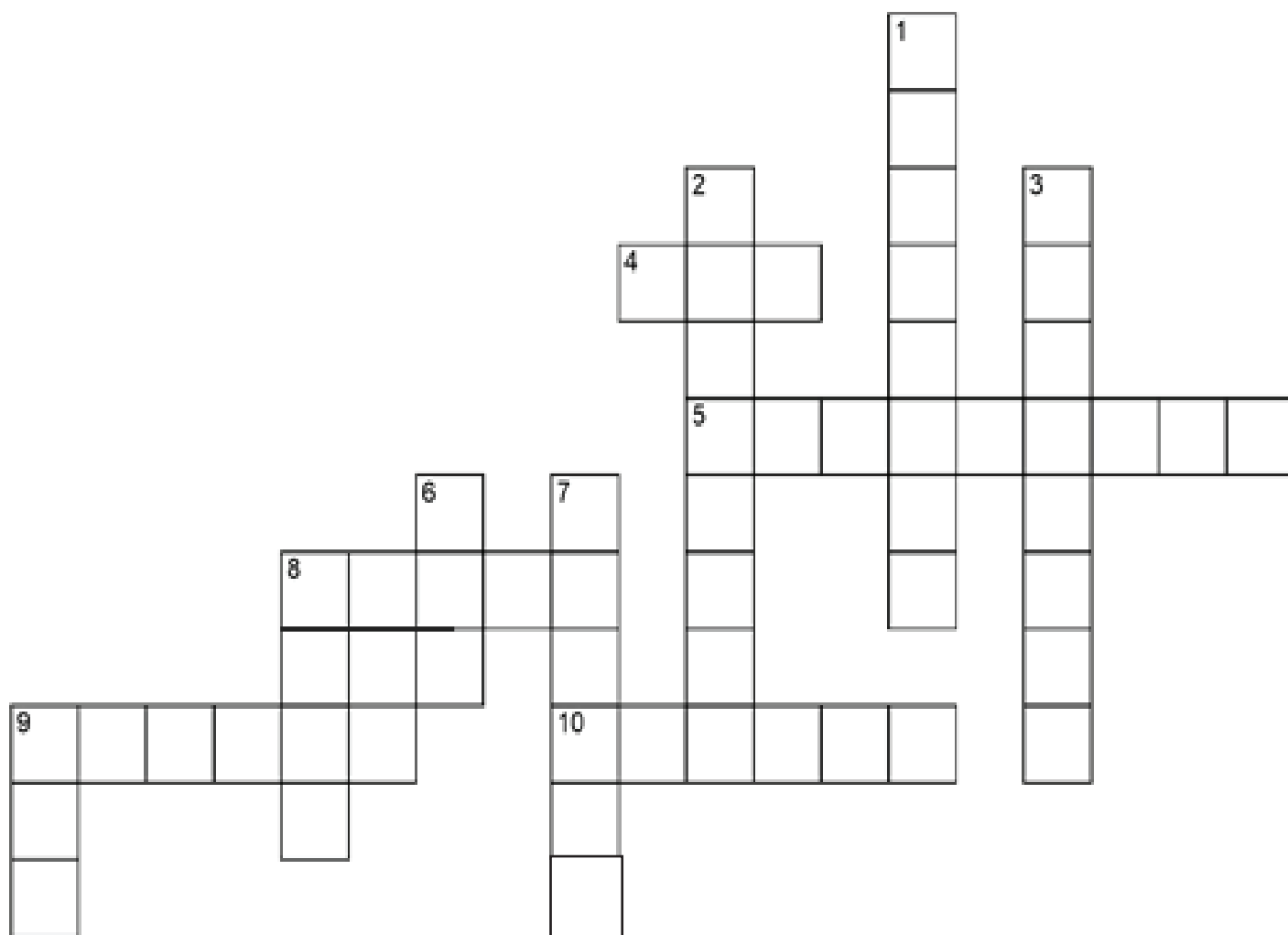
Dr. Vartika Mathur regularly takes enthusiastic students under her wing to train and currently she is working on various interesting projects with them. In the session 2018-2019 there were thirteen students training under her.

Dr. Mansi Verma has always polished students to their best and in her team right now are twelve students of Zoology (H), working on various projects encompassing fields such as Phylogeny and Bioinformatics.

Dr. P. Jayaraj with his spirited liveliness has recruited seven Second year Zoology (H) students to be trained at the R. P. Centre, AIIMS, and their project topic being "Evaluation of Telomerase reverse transcriptase enzyme in eyelid tumors."



WORD CROSS RD



CLUES

ACROSS

4. Universal be my form in every species, if I start to narrate my story, all you'll hear about is methionine.
- 5 'Like a painted ship, Upon a painted ocean.' Coleridge's allegory to which animal?
- 8 Fragmentation of this apparatus can inch you closer towards Alzheimer's.
- 9 See you later, Alligator! Hasta Manana, _____!
- 10 An Augustinian Catholic monk by occupation, he didn't let religion get in the way of science and gave the first evidence about heredity.

DOWN

- 1 I have the funny job of unzipping your genes.
- 2 Brain child of Vries, I created the X-men.
- 3 Women have one of them and men who have Klinefelter Syndrome do too while women with Turner Syndrome have none.
- 6 Hawking's tragedy.
- 7 The basis for G-banding, without it the karyotype would be a mystery.
- 8 I can be selfish as well as altruistic. I have the ability to jump. I have good housekeeping skills but I might turn lethal in my intentions.
- 9 The largest soldier among all my brothers and sisters, pentameric be my structure, I activate the complement best.



For Answers,
scan the QR Code given below :-





Registration OPEN

DU M.Sc. Entrance - 2019

CRASH COURSE

25 Feb, 2019

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PURSUIT OF THE MYSTICAL MIND

A girl has no name



The human brain has two hemispheres that tend to communicate with each other through a thick nerve tract, known as the corpus callosum. Due to evolution and origin of consciousness, human beings have a myriad of emotional feelings and emotion driven behaviours. Research suggests that positive emotions tend to be primarily processed more on the left hemisphere while negative emotions on the right hemisphere. This is commonly known as emotional lateralisation.

Eccentric. Eerie. The human psyche is rather puzzling in nature, a girl wonders.

Holding, her so called 'Book of knowledge', she thinks about all the ways to overcome her existential crisis and attain a state of balance along with inner peace. Perhaps, emotional control and competence are the key.

The girl wanders and sits near a tree and starts reading the book. The tree has numerous branches and eye catching leaves that surround her. It is so fascinating because the tree gives her a glimpse of both sides of her own mind. On one side there are feelings like happiness, love, gratitude, while on the other side, it is more of sadness, disgust, shame, and the tree is the junction where both the sides meet.

The spot near the tree puts her colourful emotions in a sync mode and followed by a state of tranquility. Yin yang is a symbol which accounts for the harmony and attainment of enlightenment.

THE
MEANDERINGS
OF
LIFE,
THROUGH
TIME.

