
DEPARTMENT OF ZOOLOGY
SRI VENKATESWARA COLLEGE
Presents
PHOENIX
TWELFTH EDITION
2023-2024
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THE STORY OF IVF AND LOUISE BROWN
Human Genome Project
BREAKTHROUGH ADVANCEMENTS
Project rhino
CONSERVATION
MILESTONES
KAIZEN
GENETIC STUDIES
Genetic AND revolution
ZOOLOGY
EVOLUTIONARY INSIGHTS
genetic Code
Darwinian Medicine
50 GLORIOUS YEARS OF ZOOLOGY DEPARTMENT

Welcome to the twelfth edition of Phoenix, a testament to the vibrant spirit of the Department of Zoology at Sri Venkateswara College! This year, as we commemorate our Golden Jubilee – 50 glorious years of fostering curiosity and igniting a passion for the animal kingdom – we've chosen the theme of "Kaizen," a Japanese philosophy that embodies continuous improvement.

The field of zoology is a living tapestry, constantly enriched by new discoveries and evolving research. From unraveling the beauty of animal behavior to deciphering the secrets of their genomes, zoologists are pushing the boundaries of knowledge at an unprecedented pace. This relentless pursuit of understanding mirrors the very essence of Kaizen.

Department of Zoology, Sri Venkateswara College has embraced this philosophy throughout its remarkable journey. Over the past five decades, we have witnessed phenomenal growth, not just in infrastructure and student enrollment, but also in the profound impact our research has made on the field. Our faculty and students have delved into diverse areas of zoology, contributing significantly to a deeper understanding of the animal world.

This magazine serves as a celebration of this continuous improvement. Within its pages, you'll encounter thought-provoking articles, insightful research findings, and inspiring stories that showcase the unwavering dedication of our department to the realm of zoology. As we embark on the next 50 years, Kaizen will remain our guiding principle, propelling us to even greater heights of discovery and knowledge creation.

Let this edition be a testament to the enduring spirit of Phoenix, rising from the ashes with each passing year, ever stronger and more vibrant. Happy reading!

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FROM THE PRINCIPAL'S DESK



Prof. Vajala Ravi

I extend my heartiest congratulations to the 12th Edition of the Annual Magazine "PHOENIX" being published by the Department of Zoology. The Magazine signifies the unwavering dedication and hard work of both students and teachers and serves as an excellent platform where science meets creativity, fostering a blend of knowledge and enthusiasm. The Department consistently showcases excellence both in academics and creativity. Teachers play a pivotal role as mentors, guiding students to channel their dedication, creativity, and intellect, thus aiding in their holistic development through academic and extracurricular avenues.

This 12th edition beautifully encapsulates the talents and innovation of students, as well as the growth of the Zoological Society "Evolvere" from its humble origins. The society has been instrumental in organizing a variety of events, including informative talks, seminars, webinars featuring renowned speakers, workshops, and engaging activities. "Phoenix" not only delves into various comprehensive aspects of the field but also reflects the myriad perspectives that this discipline ignites in young minds.

I commend the entire team for their efforts and extend my heartfelt congratulations to the Department of Zoology on the successful release of the 12th edition of their magazine. I wish them continued success in all their future endeavors!

Best wishes for the future.

Prof. Vajala Ravi
Principal

FROM THE TEACHER-IN-CHARGE



Prof. Om Prakash

With great pleasure and pride, I extend my heartiest Congratulations to the team "Phoenix" for coming up with th 12th edition of our annual magazine, "Phoenix." For the past 12 years, the department has been releasing its departmental magazine, which is a testament to the dedication of everyone towards the department. This year is particularly special as the department commemorates five decades since its establishment. As the Teacher-in-Charge of the Department of Zoology, it is my honor to share with you the remarkable journey of our department as we celebrate 50 years of its establishment.

Over the past five decades, the Department of Zoology has evolved into a vibrant center of academic excellence, research, and innovation. Our journey has been characterized by unwavering commitment to nurturing young minds, fostering scientific curiosity, and contributing to the advancement of knowledge in the field of Zoology. At the heart of our department's success lies our dedicated faculty members who have tirelessly pursued excellence in teaching, research, and mentorship. Their passion for their respective fields has inspired students to embark on meaningful academic and professional journeys, making significant contributions to the scientific community.

We are constantly exploring new avenues of research, embracing emerging technologies, and fostering collaborations with leading institutions and organizations to stay at the forefront of scientific innovation. The Zoological Society "Evolvere" has also been instrumental in holding talks by renowned academicians, orgaizing competitions ,health camps and other events for the benifit of students.

On behalf of the Department of Zoology, I extend my heartfelt gratitude to all our alumni, students, faculty, staff, and well-wishers who have been instrumental in shaping the success story of our department. Your continued support and dedication have been invaluable in our journey towards excellence. As we unveil this magazine, let us not only celebrate the achievements of the past but also look forward to a future filled with promise, growth, and continued excellence in the field of Zoology.

Best wishes.

FROM THE CONVENER AND CO-CONVENERS



COVNENER: Dr. Rajendra Phartyal

CO-CONVENER: Prof. Anita Verma
Dr. Namita Nayyar

The Phoenix rises again for the 12th time! True to its name every year “Phoenix” the annual Magazine of Department of zoology has been showcasing the creativity , intellect , and achievements of the students and faculty of the Department of Zoology at Sri Venkateswara College. The Department of Zoology at Sri Venkateswara College has established a rich legacy of 50 years marked by innovation and excellence. The department's academic calendar brims with achievements in both academics and extracurricular activities, showcasing its commitment to excelling in all endeavors.

Every year, the society events organized by the Phoenix and Evolvere teams standout for their exceptional execution. These events provide invaluable opportunities to engage with students who excel academically and demonstrate impressive organizational skills.

Both the society and the magazine continue to evolve annually, with new students eager to uphold the tradition of excellence in publications and activities. This evolution is supported by dedicated and inspiring teachers who play a pivotal role in the success of each event.

The department has conducted many successful events in the past. Our events were glorified with the presence of many excellent speakers including Dr. Jane Goodall and Prof Douglas Futuyma. The release of the 11th edition of the magazine was graced by Prof. Pramod C. Rath, professor (molecular biology) at school of life sciences, Jawaharlal Nehru University, New Delhi with a scientific talk on “Stem cells and regenerative medicine”.

This year, the department also celebrated the 50th year of its establishment by organizing a free health checkup camp, followed by talk on “Artificial Intelligence-driven Early Warning Systems for Clinical and Public Health” by Dr. Tavpritesh Sethi, Associate Professor at Department of computational biology, IIIT Delhi.

The 12th edition of the magazine, 'Phoenix', symbolizes five decades of dedication and passion, embodying the vision, creativity, and curiosity of everyone associated with zoology. This year's edition, themed "Kaizen," represents the Japanese philosophy of continuous improvement, striving to become better every day. This magazine offers readers a glimpse into the continuous improvement and achievements in the field of zoology over the past five decades.

We extend our thanks to Prof. Vajala Ravi, our esteemed Principal, for his steadfast guidance and support. We also express sincere appreciation to our students and teachers for their involvement in this challenging journey, which has resulted in the successful publication of this magazine. Our aim is to continue inspiring our students and nurturing their creative minds to sustain this legacy for generations to come! Lets Delve deeper into the pages of Phoenix to admire the hard work and creativity of students and we hope the Phoenix Soars higher and higher year after year.

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Teachers' Tabloid



Prof. Anita Verma
Specialized in Entomology and Physiology

For countless years, she has served as an enduring beacon of inspiration, guiding us gracefully through the intricate realms of physiology, and her steadfast support remains unwavering still.

Her classes make delving into animal understanding an enjoyable endeavor, undoubtedly earning the title of 'know it all of animals' among us.



Prof. Vartika Mathur
Specialized in Insect-Plant Microbe Interaction

He is lively and loves the outdoors, brimming with energy whether playing cricket or lifting spirits in the classroom. His instruction renders us "immune" to receiving low grades.



Prof. Om Prakash
Specialized in Fish Biology and Proteomics



Dr. Rajendra Phartyal
Specialized in Fish Endocrinology and Protein Purification

Standing tall and wise, deeply rooted in knowledge, his humorous demeanor ensures that each "evolution" class remains engaging and lively.



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

He fosters a space where making mistakes is embraced, his cheerful energy and vigor has made him become a favorite amongst us, and his teaching approach prompts us to envision challenges and arrive at solutions.

She possesses a melodious voice and a compassionate heart, equipping us to confront the challenges of the world. Her extensive knowledge spans from genetics to career guidance, enabling her to solve all our problems.



Dr. Richa Misra
Specialized in Tuberculosis Biology and Human Gut Microbiome

Her thorough explanations captivate us all, while your distinctive methodology astounds with its uniqueness and brilliance, seamlessly bridging the gaps between us and comparative anatomy.



Dr. Namita Nayyar
Specialized in Molecular Biology and Biotechnology



Dr. Preeti Khandelwal
Specialized in Cell and Molecular Biology

Her teachings in biochemistry have left an indelible mark on us, for she consistently imparted complex concepts with unwavering dedication, and her mnemonics are a huge help.

Enthusiastic and Confident. His profound comprehension and enthusiastic dedication to Animal Diversity enrapture each student, effortlessly engaging their curiosity.



Dr. Amarjeet Singh
Specialized in Fish Biology



Dr. Anjali S. Nawani
Specialized in Reproductive Physiology and Endocrinology

Calm and Compose in true sense. Her style exudes warmth and hospitality as she diligently guides us, continuously motivating us to excel in our true aspirations!



Dr. Mohita Bhagat
Specialized in Molecular Biology, biochemistry and Oncology

Radiating positivity and boundless energy during her teachings, she approaches each topic with fervent enthusiasm. Her adept explanations coupled with ingenious learning strategies ensure a smooth sail through the semester for us.

Quiet and intelligent, he possesses a warm and inviting demeanor towards his students, educating them with utmost care and dedication. Assisting his students in their career pursuits is his primary focus.



Dr. C. Sreenivasa Reddy
Specialized in Biochemistry

Always punctual and wise, his classes delve deep into every topic, making them captivating. His favorite questions revolve around the "why" and "how" of things.



Dr.Anandha Rao Ravuola
Specialized in Ecotoxicology and Endocrinology



Dr. Obaiah Jamakala
Specialized in Environmental Toxicology and Animal Physiology

Helpful and quiet, he is responsible for turning every interaction into a beautiful learning experience.



Dr. Sukrit Sinha
Specialized in immunology, cell signaling and computational biology of infectious diseases

Consistently being on time and reliable, motivating and inspiring us to give our utmost effort in all facets of life.

Smart and well-spoken, consistently curious about our "diagrams and files," helping us become experts in the classical zoology.



Dr. Priya Singh
Specialized in Neurosciences

Regular and unassuming demeanor,he is consistently prepared with a plethora of presentations for each class session.



Dr. Sumit Raj
Specialized in recombinant DNA Technology, Molecular Biology and Biochemistry



Dr. Dinesh Raj Pant
Specialized in Fish Reproductive Biology

Quiet and sarcastic, youngest in the department, Ever prepared to offer you sobering reminders of reality.

Team Phoenix



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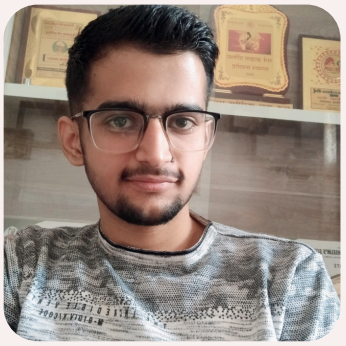
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FROM THE



DEBJEET RAY
Editor-in-chief



ISHA YADAV
Editor-in-chief

As we unveil the 12th edition of PHOENIX, a wave of emotions washes over us. This magazine is more than a collection of pages; it's a testament to the spirit of 'kaizen' – continuous improvement – that has defined our journey. From its humble beginnings a decade ago, PHOENIX has evolved, each edition a step forward in our pursuit of excellence.

Our own journeys with PHOENIX mirror this theme. Inspired by the vibrant pages years ago, we've seen this magazine transform through pre-pandemic hustle, online adaptations, and now, a return to a vibrant blend of digital and print. Through it all, one thing remains constant: the unwavering dedication of our team and the enthusiastic support of our readers.

This year, 'kaizen' isn't just a word, it's the essence of PHOENIX. Every article, every illustration, reflects the drive to better ourselves, to offer something more insightful, more creative with each passing edition. While we might strive for perfection, what matters most is the progress – the relentless pursuit of growth.

With immense gratitude and a touch of nostalgia, we present this edition. It's a celebration of a decade, but more importantly, it's a promise that the spirit of 'kaizen' will carry PHOENIX forward for many years to come.

Dear Phoenix Readers,

As we unveil the latest edition of Phoenix, our hearts swell with gratitude and pride. It's with immense joy that I extend my heartfelt thanks to each and every member of our esteemed team.

To my fellow contributors, your dedication and hard work have been the driving force behind this publication's success.A special note of appreciation goes to our talented Designers, whose creative vision and tireless efforts have breathed life into every page of this magazine. Your commitment to excellence has elevated our publication to new heights, and for that, we are truly grateful.

In this edition, as we delve into the wonders of biology, let us celebrate the power of collaboration and the triumph of teamwork. Through the lens of design, we've woven together a tapestry of knowledge and innovation, showcasing the beauty and complexity of our field.

As we embark on this journey of discovery, let optimism guide our path and passion fuel our endeavors.



PAWAN
Designer-in-chief

CORE TEAM

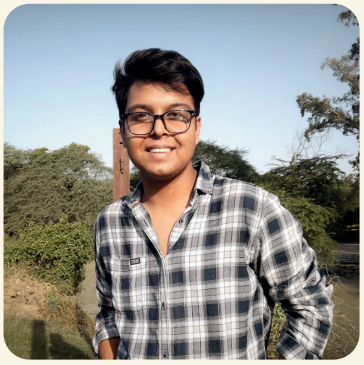
Being actively engaged in this magazine has been an extraordinary journey for us. Every step of its creation, from brainstorming to the final touches on each page, fills us with immense satisfaction. Taking on the role of managing editors has not only provided us with invaluable personal and professional growth but has also highlighted the importance of collaborative effort in bringing a magazine to life. Leading Phoenix has been both overwhelming and deeply fulfilling. Each article we've had the privilege of reading was not just informative but also thrilling, and witnessing them materialize into the finished product has been nothing short of surreal. Being part of such a dedicated and passionate team has been truly transformative for all of us. We extend our heartfelt gratitude to our teachers for their guidance and support, which have played a significant role in the creation of this remarkable magazine. As it makes its way into your hands, we hope it promises to unveil a whole new world of knowledge and inspiration. Happy reading!



KRITIKA
Managing Editor



SUJAN
Managing Editor



ABHIJEET
Creative Head

As we mark the momentous occasion of our department's 50th anniversary, it fills me with immense pride to introduce our inaugural magazine. As the creative head of Phoenix, our society's literary beacon, I am thrilled to present a culmination of talent, dedication, and innovation. This magazine encapsulates the spirit of our department showcasing various stories .Join us on this journey as we embark on a new chapter of creativity and inspiration through this beautiful peace of work.

Working with phoenix, gave me courage and confidence on my creative skills and epistemological insights. It guided me a way to present my thoughts and views about zoology and its endeavours. I'm very much delighted to learn from my seniors as well as juniors, which also resulted in formation of better bounds with the members. As the current creative head, it gave me wealth of new experience and knowledge about team management.



ANUBHA RAWAT
Creative Head



EVOLVERE



PHOENIX

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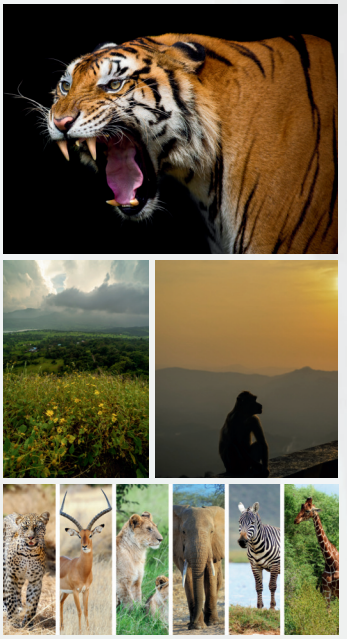


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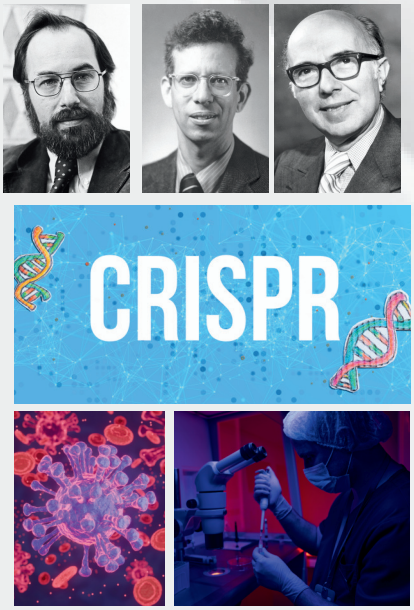
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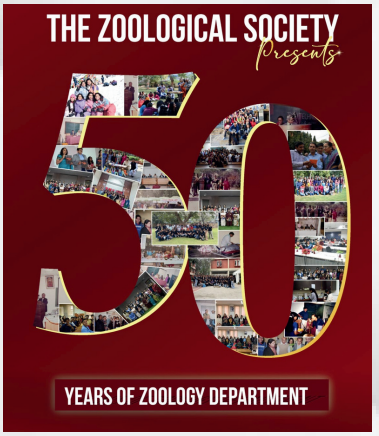


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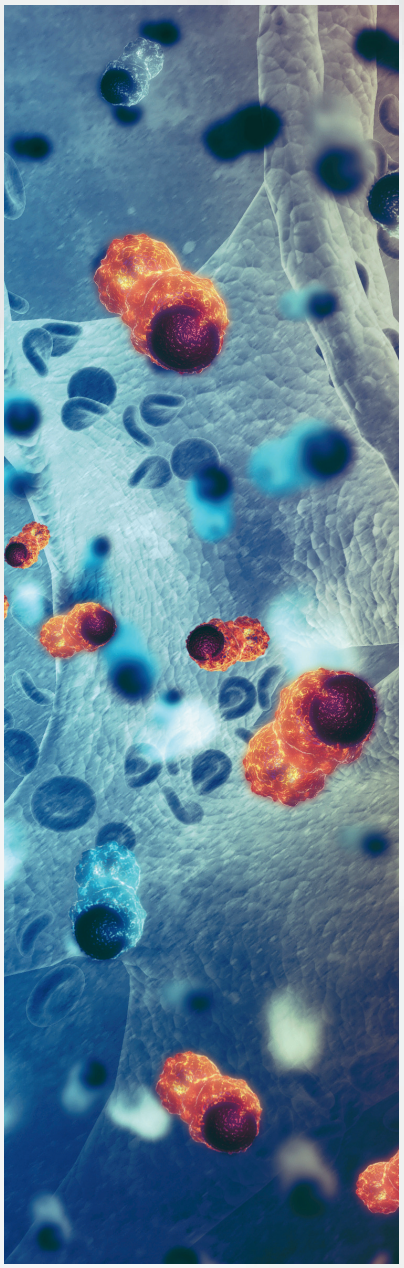
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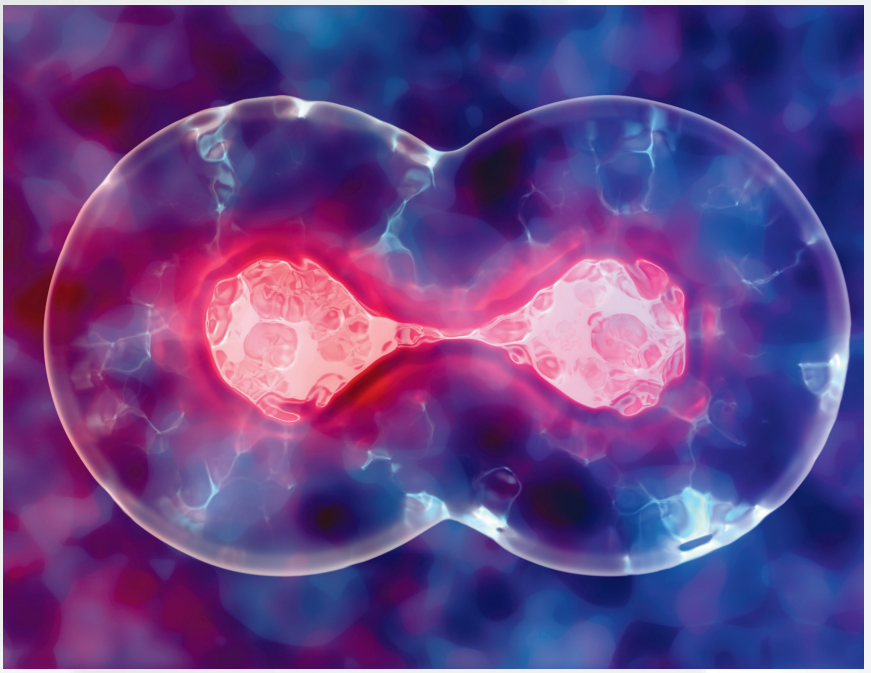
50 YEARS OF DEPARTMENT

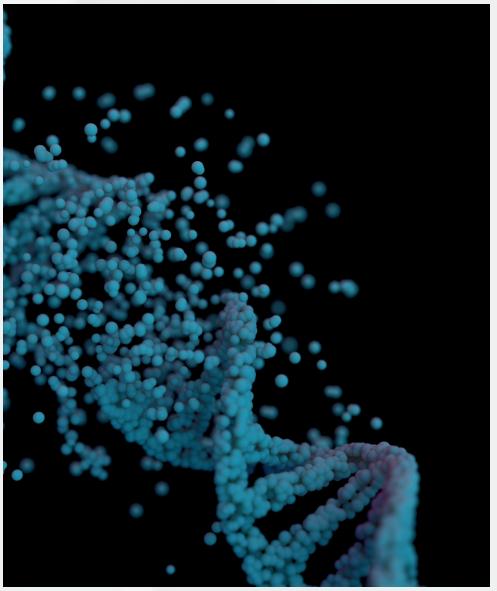
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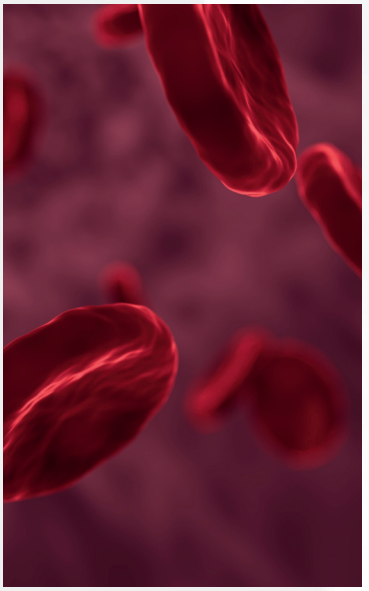


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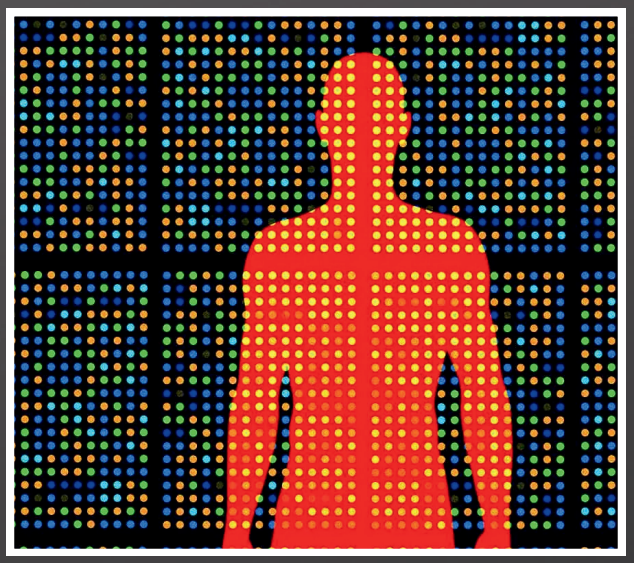
Breakthroughs Advancements

"We still have so much to learn, and with the tools of modern zoology – from DNA sequencing to remote camera traps – the pace of discovery has never been faster."

Phoenix
Section I

HUMAN GENOME PROJECT

- DEEPAK (SZH)



The Human Genome Project was a 13-year-long, publicly funded project initiated in 1990 with the objective of determining the DNA sequence of the entire euchromatic human genome within 15 years. In its early days, the Human Genome Project was met with skepticism by many people, including scientists and nonscientists alike. One prominent question was whether the huge cost of the project would outweigh the potential benefits. Today, however, the overwhelming success of the Human Genome Project is readily apparent. Not only did the completion of this project usher in a new era in medicine, but it also led to significant advances in the types of technology used to sequence DNA.

Focus of the Human Genome Project

The primary work of the Human Genome Project has been to produce three main research tools that will allow investigators to identify genes involved in normal biology as well as in both rare and common diseases. These tools are known as positional cloning. These advanced techniques enable researchers to search for disease-linked genes directly in the genome without first having to identify the gene's protein product or function. Since 1986, when researchers first found the gene for chronic granulomatous disease through positional cloning, this technique has led to the isolation of considerably more than 40 disease-linked genes and will allow the identification of many more genes in the future.

Applications of the Human Genome Project

The detailed genetic, physical, and sequence maps developed by the Human Genome Project also will be critical to understanding the biological basis of complex disorders resulting from the interplay of multiple genetic and environmental influences, such as diabetes; heart disease; cancer; and psychiatric illnesses, including alcoholism. In 1994, for example, researchers used genetic maps to discover at least five different chromosome regions that appear to play a role in insulin-dependent (i.e., type 1) diabetes. Analyses to identify the genetic components of these complex diseases require high-resolution genetic maps and must be conducted on a scale much larger than was previously possible. Automated microsatellite marker technology3 now makes it possible to determine the genetic makeup (i.e., the genotype) of enough subjects so that genes for common diseases can be mapped reliably in a reasonable amount of time. NCHGR is planning a technologically advanced genotyping facility to assist investigators in designing research studies; performing genetic analyses; and developing new techniques for analyzing common, multigene diseases.



Findings

Key findings of the draft (2001) and complete (2004) genome sequences include:

1. There are approximately 22,300 protein-coding genes in human beings, the same range as in other mammals.
2. The human genome has significantly more segmental duplications (nearly identical, repeated sections of DNA) than had been previously suspected.
3. At the time when the draft sequence was published, fewer than 7% of protein families appeared to be vertebrate specific.

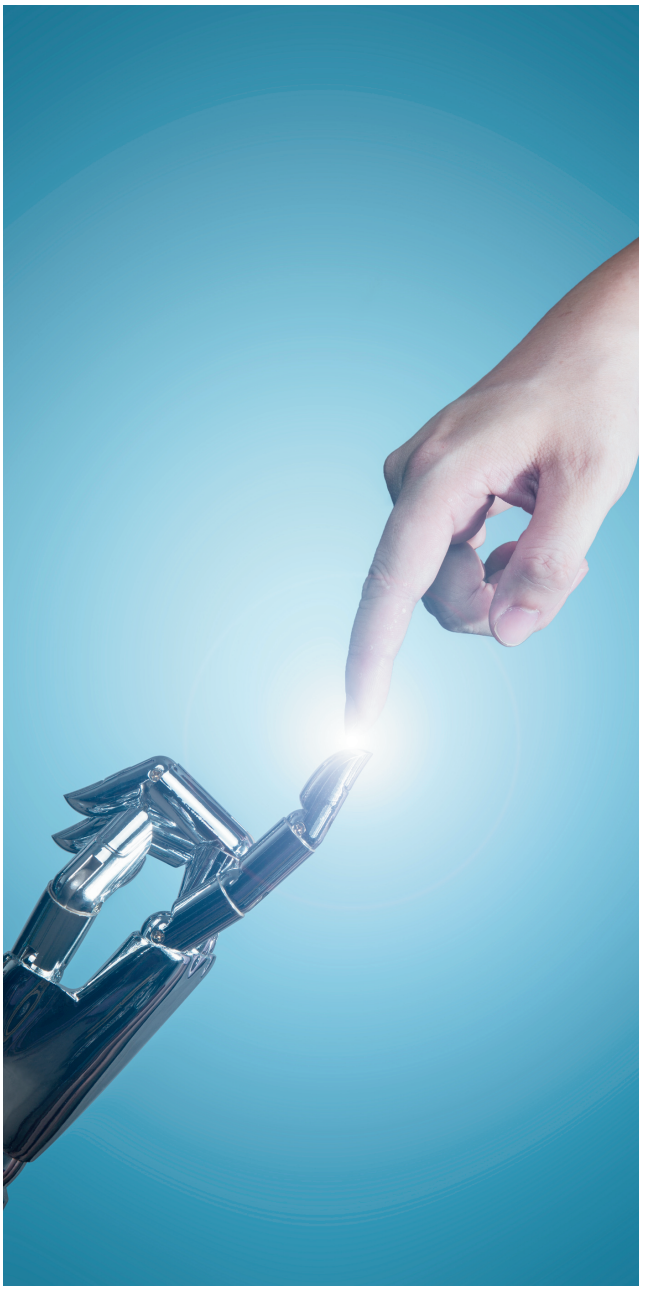
Ethical,Legal and social issues

At the onset of the Human Genome Project, several ethical, legal, and social concerns were raised in regard to how increased knowledge of the human genome could be used to discriminate against people. One of the main concerns of most individuals was the fear that both employers and health insurance companies would refuse to hire individuals or refuse to provide insurance to people because of a health concern indicated by someone's genes. In 1996, the United States passed the Health Insurance Portability and Accountability Act (HIPAA), which protects against the unauthorized and non-consensual release of individually identifiable health information to any entity not actively engaged in the provision of healthcare services to a patient.

Summary

Within a span of only 13 years, an amalgam of public and private researchers was able to successfully complete the Human Genome Project. Although these scientists used a number of different methods in their work, they nonetheless obtained the same results. In doing so, the researchers not only silenced their critics, but they also beat their own estimated project timeline by two entire years. Perhaps even more importantly, these scientists inspired an ongoing revolution in our fight against human disease and provided a new vision of the future of medicine-although that future has yet to be fully realized.

ROBOT ASSISSTED SURGERY



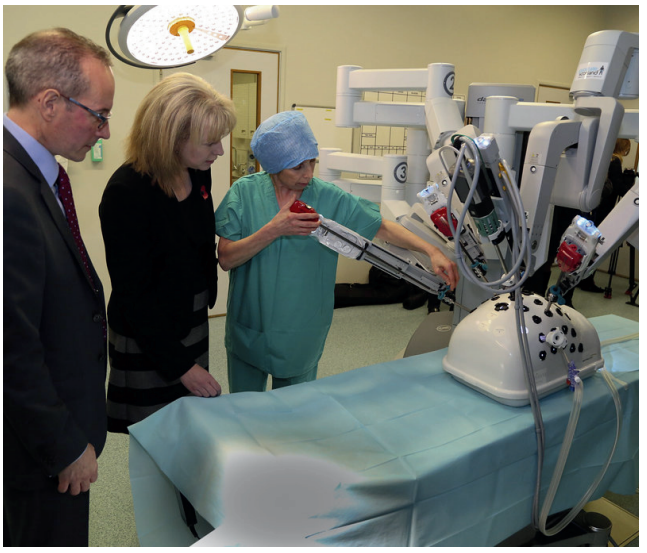
-PRACHI DOGRA (FZH)

While talking about robot assisted surgery, we first need to consider how this idea came into play and what's the history behind it and more importantly who all contributed in this to make it successful?

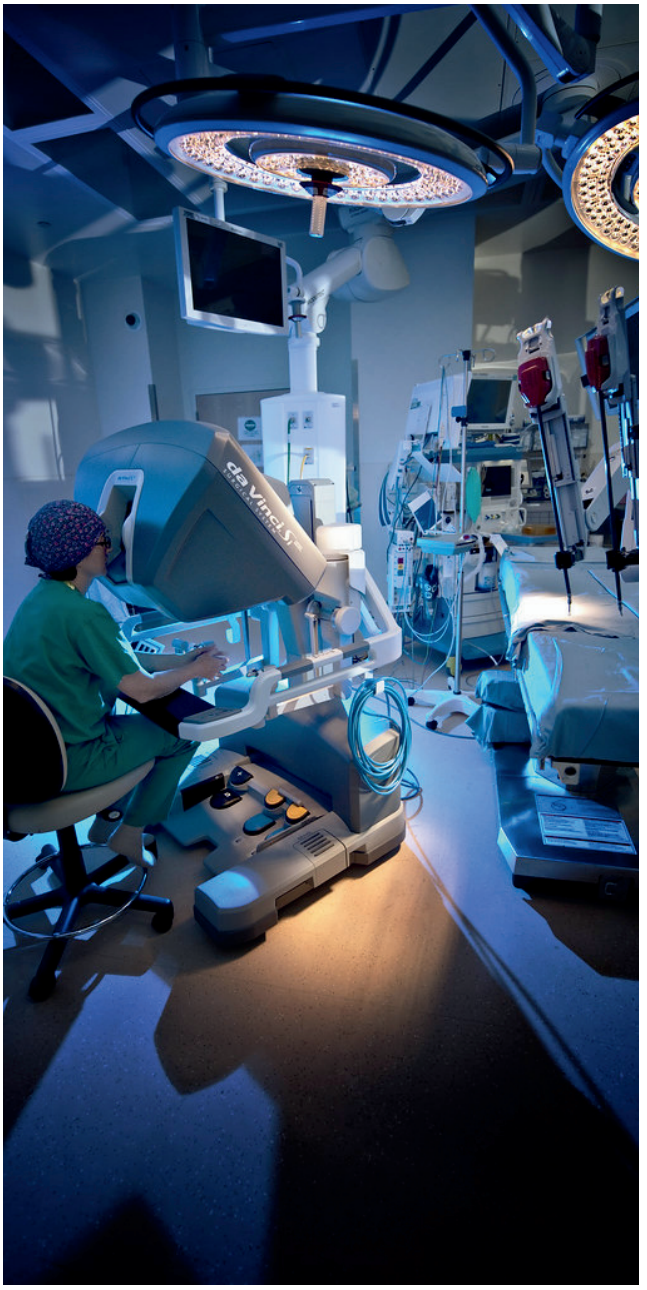
So in Robot-assisted surgery, highly advanced machines, techniques and robotic systems are used that enhance the capability of the surgeon's hands. This kind of surgery was developed to overcome the limitations of earlier surgical procedures and to perform surgery of hard-to-reach areas through small incisions. The basic technology that it uses consists of surgical arms, a special camera (that provides magnified 3D view of the surgical area) and surgical console (that controls the movement of that camera and robotic system).

The first record of robotic surgery dates to the era of 1980s, when PUMA 560 (first non-laparoscopic robot) was used to perform neurosurgical biopsies with great precision mainly in 1985. At that time Nokia Robotics manufactured nearly 1500 PUMA robots and among them PUMA 650 became quite popular.
Then, later in the 1980s only PROBOT was developed by the professor Brian Davies of Imperial College of London which performed the prostatic surgery by making several repetitive incisions.
In this same series ROBODOC was made in Integrated surgical supplies of Sacramento, CA that assisted in femur movement during hip replacement surgeries, and was approved by the FDA too. This came as a revolution in the history of orthopedic surgeries.
In 1997, the da Vinci Surgical System was introduced which used robotic arms to manipulate surgical instruments but it was approved by FDA in 2000. The AESOP and ZEUS systems were introduced in late 90s only.

The da Vinci system has become a more prevalent robotic surgery device in this field.

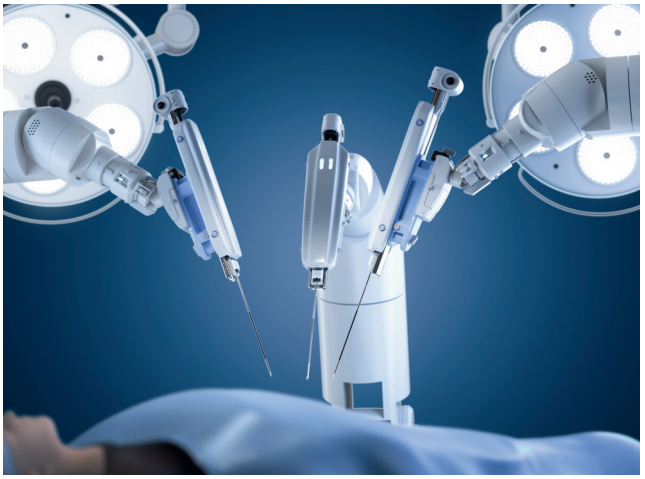


Robotic surgery proves to be very beneficial in various ways like there is low risk of infection, less pain because limited incision or sometimes no incision is required, less blood loss, faster and healthy recovery, better access to the area being operated on because we get 3D images in magnified version and minimal or negligible complications during surgery because there is great precision in movement of robotic arms likely more exact than a human hand.
The procedure to perform robotic surgery is that initially a small incision is made then doctor insert robotic instruments or tubes and 3D camera into the patient's body, then its movements are controlled by the console through which the magnified surgery procedure can be observed and manipulated.



Nowadays, robot assisted surgery is being used in various advanced and difficult surgeries like laparoscopy, transplant surgery, cholecystectomy, prostatectomy, colorectal surgery, gynecologic surgery, urologic surgery, endometriosis, bone replacement surgery, heart surgery, etc. In 2000, the All-India Institute of Medical Sciences (AIIMS) in New Delhi became the first institute in India to have its own surgical robot. Since then, the number of such robotic systems has seen a gradual increase. As of 2021, there are nearly 76 fully functional surgical robots across India, and over 500 surgeons trained in robotic surgery. Robotic Surgery cost in India ranges vary from Rs. 1,70,000 to Rs. 4,75,000.

Although there are many advantages of this kind of surgery, but there are some drawbacks also like its expenditure or costs ranges from $5000 to $50000(can be more also) and moreover they are still not considered safe enough to be operated on cancer patients.





REVOLUTIONIZING MEDICINES: THE 1979 NOBEL PRIZES IN COMPUTED ASSISTED TOMOGRAPHY

By Shreya dutta (szh)



In the realm of medical innovation, the year 1979 marked a watershed moment with the awarding of the Nobel Prize in Physiology or Medicine to Allan M. Cormack and Godfrey N. Hounsfield for their groundbreaking contributions to the development of Computed Assisted Tomography (CAT). This revolutionary imaging technique, also known as CT scanning, transformed the landscape of diagnostic medicine, offering unprecedented insights into the human body and paving the way for countless medical advancements.

The Pioneers: Cormack and Hounsfield

Allan M. Cormack, a physicist, and Godfrey N. Hounsfield, an electrical engineer, each played a pivotal role in the development of CT scanning. Cormack's mathematical insights laid the foundation for the reconstruction algorithms essential to interpreting the data collected by CT scanners. Meanwhile, Hounsfield's engineering expertise was instrumental in designing the first practical CT scanner and bringing this transformative technology to fruition. Their collaborative efforts culminated in the production of the first CT scanner, which was installed at Atkinson Morley's Hospital in London in 1972. This milestone achievement marked the beginning of a new era in medical imaging, one characterized by unprecedented levels of precision and diagnostic capability.

Unveiling the Inner Workings of the Human Body

Before the advent of CT scanning, medical imaging techniques were limited in their ability to provide detailed internal views of the body. X-rays, while valuable, offered only two-dimensional images that often lacked clarity and detail. The emergence of CAT scanning, however, heralded a new era of diagnostic precision.

Here are some key features of Computed Assisted Tomography:-

- **Cross-Sectional Imaging** : These images provide detailed information about organs, tissues, bones, and abnormalities, allowing physicians to visualize anatomical structures in three dimensions.

•**X-Ray Technology** : CT scanners utilize X-ray technology to capture multiple images of the body from different angles. These images are then processed by a computer to create detailed crosssectional images.

• **High Resolution** : CT scans offer high-resolution images with excellent clarity and detail. This enables healthcare professionals to detect small abnormalities, tumors, fractures, and other conditions that may not be visible on conventional X-rays.

• **Non-Invasive Procedure** : CT scanning is a non-invasive procedure, meaning it does not require surgery or the insertion of instruments into the body.

•**Vesatility** : CT scanning is versatile and can be used to image various parts of the body, including the head, chest, abdomen, pelvis, and extremities. It is used in the diagnosis and monitoring of a wide range of medical conditions, including cancer, cardiovascular disease, trauma, and neurological disorders.

• **Contrast Enhancement** : In some cases, contrast agents may be administered orally, intravenously, or rectally to enhance the visibility of certain structures or abnormalities during CT scanning.

•**Rapid Imaging** : CT scanning is a rapid imaging modality, with scans typically taking only a few minutes to complete. This makes it particularly useful in emergency settings where quick diagnosis and treatment are crucial.

• **Three-Dimensional Reconstruction** : CT images can be reconstructed in three dimensions, allowing healthcare providers to visualize complex anatomical structures from different angles.

•**Safety Considerations** : While CT scanning is generally considered safe, it involves exposure to ionizing radiation.

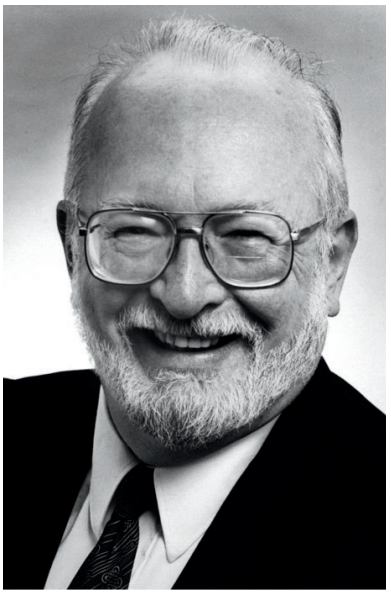


Impact And Legacy

The impact of CT scanning on modern medicine cannot be overstated. From the early detection of tumors and internal injuries t o guiding complex surgical procedures, CT scanning has become an indispensable tool in the medical arsenal. Its ability to provide detailed anatomical information quickly and non-invasively has revolutionized patient care across a myriad of specialties, from neurology to oncology to emergency medicine. The awarding of the 1979 Nobel Prize in Physiology or Medicine to Allan M. Cormack and Godfrey N. Hounsfield stands as a testament to the transformative power of scientific discovery. Their pioneering work in the development of Computed Assisted Tomography has not only revolutionized the practice of medicine but has also reshaped our understanding of the human body itself. As we reflect on their contributions, we are reminded of the profound impact that visionary thinking and interdisciplinary collaboration can have on the advancement of science and the betterment of humanity.

UNLOCKING MEDICAL FRONTIERS: 2003 NOBEL PRIZE FOR MRI

-RASHMI THAKUR (SZH)



Paul C. Lauterbur



Sir Peter Mansfield

In 2003, the Nobel Prize in Physiology or Medicine was awarded to Paul Lauterbur and Sir Peter Mansfield for their groundbreaking contributions to the field of magnetic resonance imaging (MRI). This prestigious recognition highlighted the transformative impact of their work on medical diagnostics and imaging technology.

Paul Lauterbur, an American chemist, and Sir Peter Mansfield, a British physicist, independently played pivotal roles in developing MRI into a powerful and non-invasive medical imaging technique. Their work laid the foundation for understanding the internal structures of the human body in unprecedented detail, revolutionizing the field of diagnostic medicine.

Lauterbur's pioneering work began in the 1970s when he envisioned using nuclear magnetic resonance (NMR) to create images of objects. He introduced the concept of spatial encoding, demonstrating that by applying magnetic field gradients, it was possible to localize signals from different regions within a sample. This idea formed the basis for the development of two-dimensional and three-dimensional imaging techniques.

Building on Lauterbur's groundwork, Mansfield contributed significantly by developing techniques to overcome the inherent challenges of imaging in the presence of magnetic field inhomogeneities. His innovations, particularly the development of echo-planar imaging, allowed for rapid image acquisition, reducing the time required for a scan and making real-time imaging a reality.

The combined efforts of Lauterbur and Mansfield resulted in the evolution of MRI from a theoretical concept to a practical and widely used medical imaging tool. Unlike traditional diagnostic methods that often involved invasive procedures, MRI offered a non-invasive means to visualize internal structures, making it an invaluable asset in diagnosing a variety of medical conditions.

MRI utilizes strong magnetic fields and radiofrequency pulses to generate detailed images of soft tissues, organs, and bones. This imaging modality has become indispensable in diagnosing neurological disorders, cardiovascular diseases, musculoskeletal issues, and various other medical conditions. Additionally, its ability to provide high-resolution images without exposing patients to ionizing radiation further enhances its safety and utility.

The Nobel Prize awarded in 2003 not only acknowledged the outstanding contributions of Lauterbur and Mansfield but also brought attention to the revolutionary impact of their work on medical diagnostics and patient care. The widespread adoption of MRI since then has transformed the way physicians visualize and diagnose diseases, contributing to improved patient outcomes and advancements in medical research.

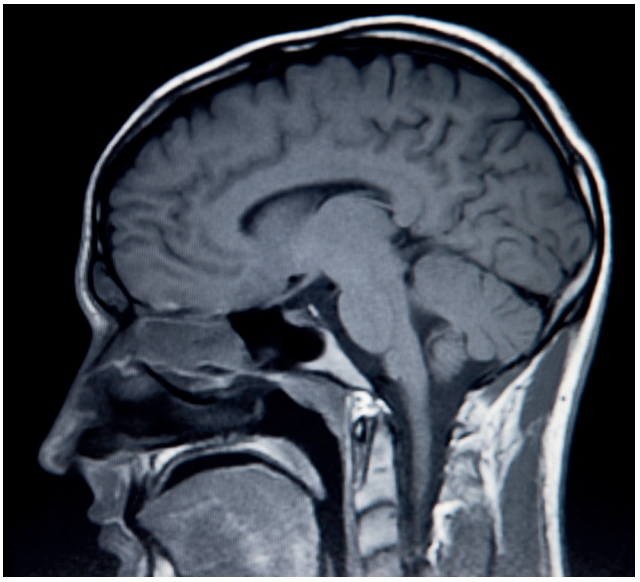
THE NOBEL PRIZE FOR MRI: A WONDERFUL DISCOVERY AND A SAD CONTROVERSY

The discovery of MRI in medicine comprised two steps. First was Damadian's report in 1971 of differences in tissue proton relaxation among normal tissues and between normal and cancer tissues, and proposal of external nuclear magnetic resonance (NMR) scanning of live human beings. Second came the development of imaging methods during 1972–80. The first methods were devised by Lauterbur—who reconstructed two-dimensional images using magnetic field gradients, imaging two capillary tubes in water and by Damadian, who registered a patent in 1972.

The main controversy involves Lauterbur's claim of exclusive primacy in the discovery of medical MRI. Although Damadian's work directly led to Lauterbur's, this fact was not acknowledged by Lauterbur until years later, and only after acerbic public complaints by Damadian.

Also, use of field gradients for linear spatial localisation, fundamental to gradient imaging methods, was discovered by Robert Gabillard and independently by Herman Carr and Edwin Purcell in 1952, and described in classic NMR textbooks. This previous work was never acknowledged by Lauterbur, despite published reminders by Carr and others.

It is sad that this important scientific discovery with direct human benefit is marred by controversy, and sadder yet that the Nobel award has exacerbated rather than settle an unnecessary controversy.



Advantages over other imaging modalities are numerous.

MRI is mostly compared to CT, ultrasound and PET scan.

First of all, unlike the ultrasound, it can produce images through the entire section of the body while the presence of the bone or air will not degrade the quality of the image. MRI spectroscopy provides important clinical benefits through the in vivo characterization of chemical composition and metabolic activity.

But since MRI is mostly compared to CT, let's be more specific about that.

First of all, MRI uses no ionizing radiation that could potentially harm the human body, while CT uses certain doses of ionizing X-rays.

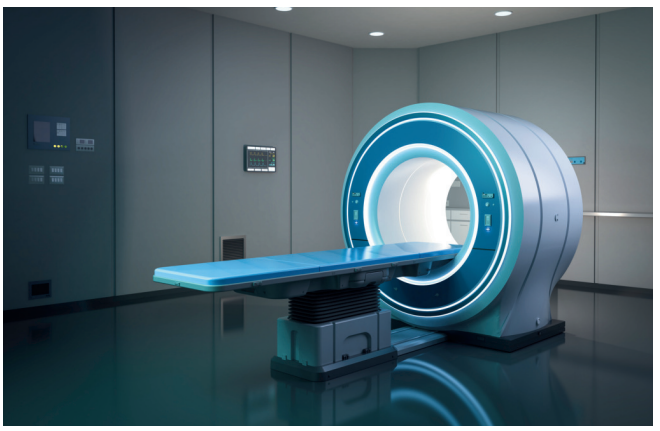
MRI has the supreme ability of soft tissue differentiation, and therefore all of the pathological processes that involve soft tissues are indicated to be examined by MRI. On the other hand, CT is excellent for bone examination, but requests contrast agents if used for soft tissue imaging, a thing that is not mandatory while using MRI.

Furthermore, in comparing to CT that only takes up to 10 minutes for complete examination, MRI can be very time consuming, because it can take from 15 minutes up to 2 hours depending on the part of the body that is being scanned.

When it's about comfort, anxiety caused by the narrow tube of the MRI was a strong disadvantage in comparing to CT, but since nowadays open MRI machines are being used, that kind of problem soon will be history.

And last, MRI is able to image in multiple planes, including sagittal, coronal, axial, and various obliquities, although reconstruction of axial data now allows CT to provide multiplanar imaging as well.

In conclusion, the Nobel Prize in Physiology or Medicine in 2003 celebrated the visionary work of Paul Lauterbur and Sir Peter Mansfield, whose contributions to magnetic resonance imaging revolutionized the field of medical diagnostics. The development of MRI has had a profound and lasting impact on healthcare, providing clinicians with a powerful tool to explore the mysteries of the human body in a safe and non-invasive manner.



THE STORY OF IVF AND LOUISE BROWN



-ABHIJEET (TZH)

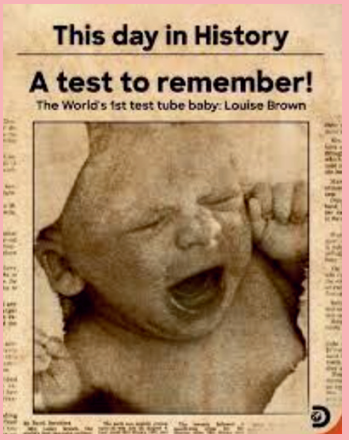


Robert G. Edwards

Sarah and Tom's longing for a child was a constant ache, a yearning that echoed in the emptiness of their nursery. Traditional medicine offered no solutions, leaving them heartbroken and adrift. Then, a whisper of hope reached them – Dr. Edwards, a visionary doctor with a radical idea: In Vitro Fertilization, or IVF. In the 1950s, it sounded like science fiction. "Growing a baby outside the body?" people scoffed. But Dr. Edwards, his eyes filled with empathy and a glint of scientific curiosity, believed in the impossible.

The path to success, however, was a scientific battlefield. Dr. Edwards meticulously collected eggs, these microscopic marvels containing half the genetic blueprint for a child. His goal: to unite these eggs with sperm in a petri dish, a sterile glass world that mimicked the intricate environment within a woman's body. But coaxing fertilization and nurturing the resulting embryo – a cluster of dividing cells brimming with potential life – proved brutally difficult. Experiments failed like dominoes toppling over, each a crushing blow to their hopes. Funding dwindled, doubt gnawed at their resolve, even Dr. Edwards' closest colleagues expressed skepticism.

Undeterred, Dr. Edwards found a partner in Dr. Steptoe, a dedicated gynecologist who shared his audacious vision. Together, they became scientific detectives, meticulously piecing together the puzzle of life in a petri dish. They experimented with minute adjustments in temperature, carefully mimicking the body's delicate hormonal dance to nurture the embryo.Animals showed early promise, but translating that success to humans was a formidable hurdle. The first attempts led to heartbreak, with miscarriages dashing the hopes of couples yearning to hold their own child. Yet, Dr. Edwards and Dr. Steptoe held onto hope, a flickering flame fueled by relentless pursuit. They tirelessly refined their techniques, their unwavering belief a beacon in the face of scientific challenges.



Finally, in 1978, their unwavering efforts culminated in a miracle. Louise Brown, a healthy baby girl, arrived, the world's first "test-tube baby." News of Louise ignited a revolution. IVF clinics sprouted worldwide, offering a lifeline to countless couples struggling with infertility. Though recognition for these pioneers came slowly, with Dr. Edwards finally receiving the Nobel Prize in 2010, their journey stands as a testament to the enduring human spirit. It's a story of relentless pursuit, marked by scientific challenges and triumphs, ultimately offering the most beautiful reward: the sound of a child's first cry, a melody born from the audacity to dream and the unwavering dedication to rewrite destinies.

A Shot of Hope: mRNA's Journey to Revolutionize Vaccines

-ABHIJEET (TZH)





Drew Weissman and Katalin Karikó

In the hushled world of the laboratory, a tiny molecule dreamt of a grand adventure. Unlike the countless strands of RNA who toiled away within the cell, mRNA wasn't content with simply carrying messages. It yearned to break free, to deliver a message of hope that could change the world. This mRNA, a brave little messenger, held a revolutionary secret. It carried the blueprint, not for a new building, but for a protein - the very key that could unlock the body's defenses. Imagine a master key, but instead of steel, it was crafted from the language of life itself.

The journey wasn't easy. Years of experimentation became mRNA's training ground. Brilliant scientists like Katalin Karikó and Drew Weissman were its mentors, wrestling with the challenges of making mRNA stable and powerful enough to deliver its message. They faced setbacks, frustrations, moments where the dream seemed to fade. But mRNA, fueled by a relentless hope, persevered.Then came the call to action. A monstrous virus, cloaked in spikes, began its rampage across the globe. This was mRNA's moment. With meticulous care, scientists like delicate artisans, crafted a message specifically for this enemy. The message? How to build a harmless copy of the virus's spike protein, a training dummy for the body's immune system.

Clinical trials became the proving ground. Thousands of volunteers, with courage in their hearts, became mRNA's champions. The results were a resounding success! Billions of doses later, the tide began to turn. The severity of the illness dropped, lives were saved, and a sense of normalcy started to return.The world took notice. The 2023 Nobel Prize in Physiology or Medicine became mRNA's coronation. It was a celebration not just of this tiny molecule, but of the countless scientists, doctors, and volunteers who believed in its potential. It was a testament to the power of collaboration, the unwavering spirit of research, and the boundless potential of science to heal the world.

But mRNA's story isn't over. It's still evolving, dreaming of even bigger adventures. Imagine vaccines tailored to each person, booster shots offering broader protection, and even mRNA therapies for diseases that have plagued humanity for centuries. The future is bright, and mRNA, the once-dreamy messenger, is poised to be a central character in this ongoing saga of scientific marvel.

BIOLOGIA

ACROSS

3. Muscle responsible for goosebumps
4. Effect of one gene mask the effect of another
5. Father of Zoology
6. prevents and treats malaria
7. connecting link between reptiles and birds

DOWN

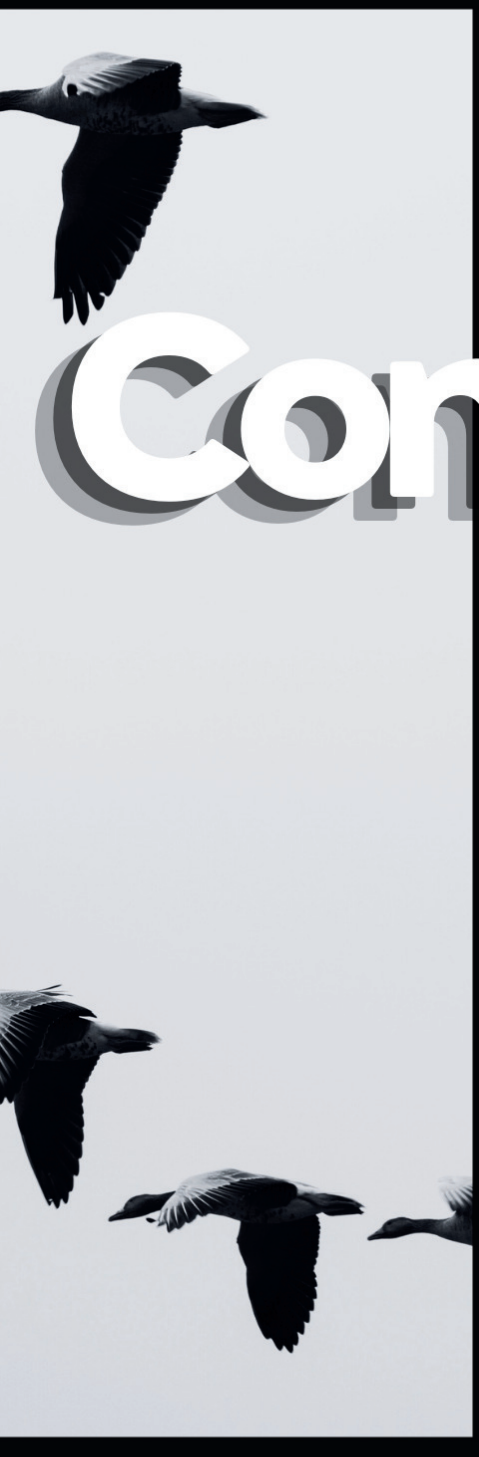
1. Packaging site of the cell
2. Body's largest organ
8. uppermost layer of the atmosphere
9. Only birds to fly backwards
10. Poisonous plant in the world, whose seed has ricin (oil)

ANSWERS

1. Golgi bodies 2. skin 3. arrector pili 4. epistasis 5. Aristotle 6. Chloroquine 7. Archaeopteryx 8. Exosphere 9. humming bird 10. castor oil

Phoenix
Section II

photography by
Debjeet



Conservation Milestones

The animals of the world exist for their own reasons. We have no right to eliminate them.

beauty in harmony.

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REVIVING SPEED: THE CHEETAH REINTRODUCTION IN INDIA

-ANUBHA (SZH)





India has been known for inhabiting a wide range of Biodiversity which includes various kinds of flora and fauna. It was once home to Asiatic Cheetah too, habitat ranging from the north western India to the Gangetic plain on the east, extending to the Deccan Plateau in the south but was declared extinct in 1952. The reason for such tragedy was none other than habitat loss and hunting for their distinctive spotted coats. The last three recorded Cheetahs were hunted down by an Indian prince, Maharaja Ramanuj Pratap Singh Deo in the late 1940s.

Cheetah's known for their unparalleled speed and striking beauty and hold a special place in the collective consciousness of humanity. Their current habitat range is from northwestern, eastern and southern Africa and central Iran. It resides in a variety of habitats such as savannahs in the Serengeti, arid mountain ranges in the Sahara, and hilly desert terrain. One of the biggest misconceptions around them is being considered as one of "Big Cats" but it's on the contrary as they don't belong to genus Panthera but Acinonyx, also they don't have the ability to roar like the Big ones. According to the latest IUCN status they are listed as Vulnerable species. In India after many conservation efforts Cheetahs were reintroduced in Kuno National Park, Madhya Pradesh. Cheetah relocation operations in India initially began in 2009, but it wasn't until 2020 that the Supreme Court of India ultimately approved them. This initiative to bring back cheetahs to India is not merely about the return of a magnificent predator but also symbolizes a commitment to reclaiming lost heritage and safeguarding the rich tapestry of India's natural heritage.

On 17 September 2022, the first eight cheetahs from Namibia (after a period in quarantine) were translocated to Kuno National Park to embark history in the realm of wildlife conservation. The proposal to relocate cheetahs from Africa to India was a bilateral effort involving both African and Indian authorities. Kuno National park is currently fit for this cause due to its resemblance in habitat and climatic conditions suitable for South African cheetahs, and also availability of prey. South African Cheetahs (Acinonyx jubatus jubatus) were chosen as they bear genetic resemblance to the Asiatic cheetah (Acinonyx jubatus venaticus) more than other African subspecies. Meanwhile due to dwindling numbers of Asiatic Cheetahs, they were considered as an "Unsuitable choice" for the following initiative. Therefore, it was appropriate to choose a subspecies genetically closer to their Asian cousins.

The potential cheetah habitat covering over 3200 km² in the Kuno landscape could provide a prey base for up to 36 cheetahs. A total of 20 cheetahs were relocated.All the cheetahs in Kuno have a African wildlife tracking radio collar. Initially the initiative seemed to be going smoothly until 27th March when one the female of the first batch of the eight cheetah died due to kidney ailment. After this pattern of fatality continued, resulting in the death of a total 10 individuals including 7 adults and 3 cubs (born in Kuno). The main reasons for this misfortune stated by the Indian Govt. were all due to natural causes including traumatic shock and dehydration.

However, by embracing innovative approaches, engaging local communities, and fostering sustainable development practices, India's putting it's best to witness these glorious creatures to prosper once again.

ROARING SUCCESS: THE RESURGENCE OF INDIA'S TIGERS - PROJECT TIGER

- CHETNA SHARMA (TZH)



Project Tiger is a wildlife conservation movement initiated in India in 1973 to protect the Bengal tiger.
Objective of the project: -
Project Tiger's main aims are to:
1) Reduce factors that lead to the depletion of tiger habitats and to mitigate them by suitable management. The damages done to the habitat shall be rectified to facilitate the recovery of the ecosystem to the maximum possible extent.

2) Ensure a viable tiger population for economic, scientific, cultural, aesthetic, and ecological values.
The monitoring system M-STrIPES was developed to assist patrol and protecting tiger habitats. It maps patrol routes and allows forest guards to enter sightings, events, and changes when patrolling. It generates protocols based on these data so that management decisions can be adapted.
The various tiger reserves were created in the country based on the 'core-buffer' strategy:
Core area: the core areas are free of all human activities. It has the legal status of a national park or wildlife sanctuary. It is kept free of biotic disturbances and forestry operations like a collection of minor forest produce, grazing, and other human disturbances are not allowed within.

Buffer areas: the buffer areas are subjected to 'conservation-oriented land use'. They comprise forest and non-forest land. It is a multi-purpose use area with twin objectives of providing habitat supplement to spillover population of wild animals from the core conservation unit and providing site-specific co-developmental inputs to surrounding villages for relieving their impact on the core area.
The important thrust areas for the Plan period are:

- Stepped-up protection/networking surveillance.
- Voluntary relocation of people from core/critical tiger habitat to provide inviolate space for tiger.
- Use of information technology in wildlife crime prevention.
- Addressing human-wildlife conflicts.
- Capacity building of frontier personnel.
- Developing a national repository of camera trap tiger photographs with IDs.
- Strengthening the regional offices of the NTCA.
- Declaring and consolidating new tiger reserves.
- Foresting awareness for eliciting new tiger reserves.
- Foresting Research.





For each tiger reserve, management plans were drawn up based on the following principles:

- Elimination of all forms of human exploitation and biotic disturbance from the core area and rationalization of activities in the buffer zone
- Restricting the habitat management only to repair the damages done to the ecosystem by human and other interferences to facilitate recovery of the ecosystem to its natural state
- Monitoring the faunal and floral changes over time and researching wildlife.

Management and population: -

Project Tiger was administered by the National Tiger Conservation Authority. The overall administration of the project is monitored by a steering committee, which is headed by a director. A field director is appointed for each reserve, who is assisted by a group of field and technical personnel.

Shivalik-Terai Conservation Unit, North-East Conservation Unit, Sunderbans Conservation Unit, Western Ghats Conservation Unit, Eastern Ghats Conservation Unit, Central India Conservation Unit, Sariska Conservation Unit, Kaziranga Conservation Unit

By the late 1980s, the initial nine reserves covering an area of 9,115 km2 (3,519 sq mi) had been increased to 15 reserves covering an area of 24,700 km2 (9,500 sq mi). More than 1100 tigers were estimated to inhabit the reserves by 1984. By 1997, 23 tiger reserves encompassed an area of 33,000 km2 (13,000 sq mi), but the fate of tiger habitat outside the reserves was precarious, due to pressure on habitat, incessant poaching, and large-scale development projects such as dams, industry, and mines.

Wireless communication systems and outstation patrol camps have been developed within the tiger reserves, due to which poaching has declined considerably. Fire protection is effectively done by suitable preventive and control measures. Voluntary village relocation has been done in many reserves, especially from the core area. Livestock grazing has been controlled to a great extent in the tiger reserves. Various compensatory developmental works have improved the water regime and the ground and field level vegetation, thereby increasing the animal density. Research data about vegetation changes are also available from many reserves. Plans include the use of advanced information and communication technology in wildlife protection and crime management in tiger reserves, GIS-based digitized database development, and devising a new tiger habitat and population evaluation system.



Controversies and problems

Project Tiger's efforts were hampered by poaching, as well as debacles and irregularities in Sariska and Namdapha, both of which were reported extensively in the Indian media. The Forest Rights Act passed by the Indian government in 2006 recognizes the rights of some forest dwelling communities in forest areas. This has led to controversy over implications of such recognition for tiger conservation. Some have argued that this is problematic as it will increase conflict and opportunities for poaching; some also assert that "tigers and humans cannot co-exist". Others argue that this is a limited perspective that overlooks the reality of human-tiger coexistence and the abuse of power by authorities, evicting local people and making them pariahs in their own traditional lands rather than allowing them a proper role in decision-making, in the tiger crisis. The latter position was supported by the Government of India's Tiger Task Force and is also taken by some forest dwellers' organizations.

PROJECT RHINO:



"A TRIUMPH OF CONSERVATION IN THE FACE OF ADVERSITY"

-ANUSHKA DHIMAN (TZH)

The population of the Greater one-horned rhino was once widespread across Asia. However, by the early 1900s, hunting and habitat loss had led to a significant decline, with numbers dwindling to fewer than 200. Rhinos were once found in various regions across Europe, Asia, and Africa, and early Europeans depicted them in cave paintings. At the start of the 20th century, there were 500,000 rhinos in Africa and Asia. However, by 1970, the number had decreased to 70,000, and today, approximately 27,000 rhinos exist in the wild. Due to persistent poaching and habitat loss spanning many decades, very few rhinos now survive outside national parks and reserves. The black, Javan, and Sumatran rhino species are all critically endangered.

In the early 2000s, as rhinoceros populations faced escalating threats, conservationists around the world rallied together to launch Project Rhino in 2005. This pioneering initiative marked a turning point in the battle against poaching and habitat loss, aiming to secure a future for these iconic creatures. In 2005, in collaboration with the Bodoland Territorial Council and the Government of Assam, conservationists initiated a comprehensive, cooperative plan for species management. Their ambitious objective was to establish a wild population of 3,000 Greater one-horned rhinos by 2020, distributed across seven sites in the State of Assam. This initiative, known as "Indian Rhino Vision 2020" (IRV2020), aimed to mitigate poaching and enhance the Greater one-horned rhino population in Assam. Facing overcrowding in Kaziranga and Pobitora, partners within the project began relocating rhinos to other protected areas, facilitating successful breeding and expanding their distribution across Assam.

Innovative Approaches to Conservation:

The initial stage of the program spanned from July 2005 to June 2008 and focused on enhancing rhino protection across various sources and protected areas. It involved the relocation of rhinos from Pobitora and Kaziranga to Manas National Park for protection and monitoring. Pobitora, having a concentrated rhino population of over 90 within less than 18 square kilometers, led to the decision to distribute the rhino population among other parks to reduce competition and the risk of disease-related losses. The program concluded following its eighth round of translocation. As per WWF-India, the final phase of wild-to-wild translocation within IRV2020 resulted in the transfer of 22 rhinos from Pobitora Wildlife Sanctuary and Kaziranga National Park to Manas National Park in 2021.

Project Rhino 2005 employed cutting-edge technologies and collaborative strategies to safeguard rhinoceros populations, including:

1. **Surveillance Drones**: Utilizing unmanned aerial vehicles with high-resolution cameras for real-time aerial surveillance of rhino habitats, enhancing monitoring efficiency.
2. **GPS Tracking Devices**: Fitting rhinos with GPS devices to monitor their real-time locations and behaviors, enabling swift response to unusual activities or signs of poaching.
3. **Smart Sensors and AI**: Incorporating smart sensor technology, including acoustic sensors detecting gunshots and human movement, coupled with AI algorithms to analyze large datasets for identifying patterns and preventing potential poaching incidents.
4. **International Collaboration**: Fostering collaboration between governments, conservation organizations, and local communities globally to share intelligence, resources, and best practices for strengthened conservation efforts.
5. **Community Involvement and Sustainable Development**: Emphasizing community engagement, Project Rhino implemented sustainable development programs to provide alternative livelihoods, reducing economic pressures driving individuals toward poaching.
6. **Research and Data Integration**: Actively engaging in scientific research to understand rhino behavior, ecology, and conservation impact, integrating data into comprehensive databases for evidence-based decision-making.

Milestones and Achievements:

Over the past decade, Project Rhino has celebrated significant milestones in its mission to protect rhinos. Notable achievements include a reduction in poaching incidents, stabilization of rhino populations in targeted areas, and the successful prosecution of individuals involved in the illegal wildlife trade. The project has also contributed valuable data to scientific research, enhancing our understanding of rhino behavior and ecology.

The successful recovery of the one-horned rhino stands as a remarkable conservation achievement in Asia. The Indian Rhino Vision 2020 concluded in April 2021 with the eighth round of translocation, relocating two rhinos from Pobitora Wildlife Sanctuary, Assam, to Manas National Park, Assam. Thanks to the efforts of The Indian Rhino Vision, rhinos now inhabit seven protected areas in India: Pobitora Wildlife Sanctuary (Assam), Orang National Park (Assam), Kaziranga National Park (Assam), Manas National Park (Assam), Jaldapara National Park (West Bengal), Gorumara National Park (West Bengal), and Dudhwa National Park (Uttar Pradesh).As of 2022, there has been an impressive 167% increase in the one-horned rhino population since the 1980s. The Asian Rhino Specialist Group (**AsRSG**) reported a total of 4,014 one-horned rhinos in India, Nepal, and Bhutan after a survey in 2022. Kaziranga, housing 2,613 individuals, represents almost 65% of the total rhino population.



PROJECT HUNGAL: REVIVING HOPE FOR THE KASHMIRI STAG

-PRACHI DOGRA
(FZH)

The Kashmir Stag (*Cervus hanglu hanglu*), also known as the Hangul, is a majestic cervid species native to the dense forests of the Kashmir Valley in India. With its distinctive antlers and reddish-brown coat, the Hangul has long captivated wildlife enthusiasts and researchers alike. However, this iconic species faces numerous threats to its survival, including habitat loss, poaching, and competition with domestic livestock. In response to these challenges, conservationists have initiated Project Hangul (Habitat Augmentation, Nurturing, and Genetic Upsurging of the Hangul).

Objectives of Project Hangul

The primary objective of Project Hangul is to conserve and restore the population of the Kashmir Stag through a multi-faceted approach. This includes habitat restoration, anti-poaching efforts, community engagement, and genetic management.

Habitat Restoration

Habitat loss and degradation are significant threats to the Hangul population. Project Hangul focuses on restoring degraded habitats by planting native tree species and controlling invasive plants. This not only provides suitable habitat for the Hangul but also benefits other wildlife species in the region.

Anti-Poaching Measures

Poaching for the Hangul's antlers and meat remains a critical concern. Project Hangul collaborates with local law enforcement agencies to combat poaching activities through increased patrols, surveillance, and awareness campaigns. Additionally, community members are encouraged to report any illegal activities related to wildlife poaching.

Community Engagement

Engaging local communities is essential for the success of conservation efforts. Project Hangul works closely with villagers living near Hangul habitats to raise awareness about the importance of wildlife conservation. This includes providing alternative livelihood options to reduce dependency on natural resources and involving community members in monitoring and research activities.

Genetic Management

Genetic diversity is crucial for the long-term survival of any species. The Hangul population faces genetic threats due to small population size and fragmentation. Project Hangul implements genetic management strategies such as captive breeding programs and translocation efforts to enhance genetic diversity and prevent inbreeding.

Research and Monitoring

Continuous monitoring and research are essential for assessing the effectiveness of conservation interventions and understanding the ecological needs of the Hangul. Project Hangul conducts population surveys, habitat assessments, and genetic studies to inform conservation strategies and adapt them as needed.

Challenges

Despite its achievements, Project Hangul continues to face numerous challenges. Habitat loss and fragmentation remain significant threats, exacerbated by human encroachment and developmental activities in the Kashmir Valley. The ongoing conflict in the region further complicates conservation efforts, making access to certain areas difficult and posing risks to both wildlife and conservation personnel.

Poaching continues to pose a significant threat to the Hangul population, driven by demand for deer antlers and meat in traditional medicine and illicit markets. Effective enforcement of wildlife protection laws and community vigilance are essential in combating this menace.

Climate change presents another formidable challenge to Hangul conservation. Shifts in temperature and precipitation patterns could alter habitat suitability, potentially leading to further habitat loss and fragmentation. Adaptation strategies, including the creation of climate-resilient habitats and corridors, are imperative to mitigate the impacts of climate change on Hangul populations.

Conclusion

Project Hangul represents a concerted effort to conserve one of India's most iconic wildlife species, the Kashmir Stag. Through a combination of habitat restoration, anti-poaching measures, community engagement, genetic management, and research, this initiative aims to ensure the survival of the Hangul for future generations. However, the success of Project Hangul depends not only on the efforts of conservationists but also on the collective support and participation of local communities, government agencies, and other stakeholders. By working together, we can secure a brighter future for the Hangul and the rich biodiversity of the Kashmir Valley.





CONSERVING WESTERN GHATS

-MUSKAN (FZH)

Western Ghats consist of a chain of mountains running parallel to India's Western Coast and passing from the states of Kerala, Maharashtra, Goa, Gujarat, Tamil Nadu and Karnataka. The Western Ghats of India, a UNESCO World Heritage Site, is a treasure trove of biodiversity. Stretching over 1,600 kilometre along the western coast of India, the Western Ghats is one of the world's top biodiversity hotspots. Housing more than 30% of India's plant, fish, herpeto-fauna, bird, and mammal species. The region boasts an exceptionally high percentage of endemic species with 78% of amphibians (*Micrixalus, Indirana, Nyctibatrachus)*, 62% of reptiles (Indian cobra, Sarada superba, Indian python), 38% of angiosperms, 53% of fishes, and 12% of mammals(Nilgiri Tahr, Sloth bear and Lion-tailed macaques) in India being exclusive to the Western Ghats. The Western Ghats supports one of the world's highest concentrations of cultivated plants.

Significance:

A total of 39 areas in the Western Ghats were designated as world heritage sites in 2012. The Ghats influence the Indian monsoon weather patterns that mediate the warm tropical climate of the region. They act as a barrier to rain-laden monsoon winds that sweep in from the south-west. Western Ghats are home to tropical evergreen forests, as well as to 325 globally threatened species. The Western Ghats form the catchment area for complex riverine drainage system that drain almost 40% of India.

Threats:

- Biodiversity Relates Issues: Forest loss, habitat fragmentation, habitat degradation by invasive plant species, encroachment and conversion also continue to affect the Ghats.
- Climate Change: In the past years (2018-21), floods have ravaged the ghat areas, Landslides and flash floods ravaged the ghat areas of Konkan in 2021, Cyclones are also gaining intensity with the warming of the Arabian Sea leaving the west coast especially vulnerable.
- Industrialisation, Developmental Pressures, poaching, illegal hunting and deforestation.

Conservation programs:

The Wildlife Institute of India, conducts research on endangered species and implements conservation programs. Additionally, the Ministry of Environment, Forest and Climate Change in India has initiated various projects to promote sustainable development and protect the Western Ghats.

GADGIL COMMITTEE (2011): Also known as the Western Ghats Ecology Expert Panel (WGEEP), it recommended that all of the Western Ghats be declared as the Ecological Sensitive Areas (ESA) with only limited development allowed in graded zones.

Kasturirangan Committee (2013) : It sought to balance the development and environment protection. It recommended that only 37% of the total area should be brought under ESA and a complete ban on mining, quarrying and sand mining be imposed in ESA.

The **Ministry of Environment, Forest and Climate Change (MOEFCC)** is implementing a number of schemes for conservation of forest, wildlife and environment in Western Ghats States. The Government of India has undertaken proactive conservation initiatives. Various schemes, including the National Afforestation Programme, Integrated Development of Wildlife Habitat, Forest Fire Prevention and Management, Project Tiger, and National Mission for a Green India, are being implemented in the Western Ghats states. Funds from the Compensatory Afforestation Management & Planning Authority are allocated to conservation efforts.

WCS-India provides support to the initiatives of the Forest Department in the expansion of the Protected Area Network. National parks and wildlife sanctuaries have been established to provide safe havens for endangered species and their habitats.

Community participation plays a vital role in Western Ghats conservation. Recognizing the importance of involving local communities, various programs have been launched to create awareness and promote sustainable practices. These initiatives aim to empower communities fostering a sense of ownership and responsibility. Voluntary relocation is a government-sponsored program which supports willing families to voluntarily resettle outside Protected Areas.

Research plays a pivotal role in understanding the Western Ghats' ecosystems and identifying conservation strategies. This knowledge forms the basis for developing effective conservation plans and policies. Education and awareness programs are crucial for fostering a culture of conservation among the masses. Schools, colleges, and NGOs play a vital role in raising awareness and instilling a sense of responsibility towards nature.

To contribute to the conservation of tigers in the Western Ghats, WCS-India undertakes the following activities: supports the government with tiger habitat consolidation; provides technical support on law enforcement actions that protect tigers, their prey, and their habitat; helps in capacity building for enforcement agencies; and supports the Government in monitoring tiger and prey populations using cutting-edge scientific techniques.

Policy reforms are essential to ensure the long-term sustainability of the Western Ghats. Collaborative efforts between the government, conservation organizations, and local communities can lead to meaningful policy changes and better protection of the Western Ghats.

In conclusion, the Western Ghats of India is a priceless gem in terms of its biodiversity and ecological significance. Conservation efforts, driven by research, policy reforms, and community participation, are essential to protect this natural wonder.

ENDANGERED SPECIES ACT

(United States law)

-RISHI RAJ (SZH)

An Act to provide for the conservation of endangered and threatened species of fish, wildlife, and plants, and for other purposes.

The Endangered Species Act (ESA) of 1973 stands as one of the most significant pieces of environmental legislation in the United States. Enacted with the purpose of conserving and protecting endangered and threatened species and their habitats, the ESA has been instrumental in safeguarding biodiversity and preserving ecosystems for future generations. The ESA was signed into law by President Richard Nixon on December 28, 1973. The Supreme court of United state described it as "the most comprehensive legislation for the preservation of endangered species enacted by any nation".

Historical Context:

In the early 1970s, concerns over the rapid decline of numerous species due to habitat destruction, pollution, overexploitation, and other human activities prompted a call for action. One example was the near extinction of Bison. The Endangered Species Act emerged as a response to these mounting environmental challenges, reflecting a growing awareness of humanity's impact on the natural world. Scientists played a prominent role in raising public awareness about the rapid extinction. For example, **George Bird Grinnell** highlighted bison decline by writing articles in ***Forest and Stream.***

Features of ESA (1973):

It consists of 17 sections. Key legal requirements include:

- The federal government must determine whether species are endangered or threatened. If so, they must list the species for protection under the ESA.
- If determinable, critical habitat must be designated for listed species.
- Absent certain limited situations, it is illegal to "take" an endangered species. "Take" can mean kill, harm, or harass.
- Federal agencies will use their authorities to conserve endangered species and threatened species.
- Federal agencies cannot jeopardize listed species' existence or destroy critical habitat.
- Any import, export, interstate, and foreign commerce of listed species is generally prohibited.



SAVE OUR WILDLIFE!

Listing status:

U.S. Endangered Species Act (ESA)

Listing status and its abbreviations used in Federal Register and by federal agencies like the U.S. Fish and Wildlife Service:

- E = endangered – any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insect determined by the Secretary to constitute a pest.
- T = threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range

Other categories:

- C = candidate – a species under consideration for official listing
- E(S/A), T(S/A) = endangered or threatened due to similarity of appearance – a species not endangered or threatened, but so closely resembles in appearance a species which has been listed as endangered or threatened, that enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species.
- XE, XN = experimental essential or non-essential population – any population (including eggs, propagules, or individuals) of an endangered species or a threatened species released outside the current range under authorization of the Secretary. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes, and as species proposed for listing on private land.



Successes and Criticism:

Since its enactment, the Endangered Species Act has achieved notable successes in preventing the extinction of numerous species, including the bald eagle, the American alligator, and the Graywolf. However, the act has also faced criticism and challenges, including conflicts with landowners and industries over land use restrictions, delays in listing decisions, and insufficient funding for conservation efforts, for example: In 1978, a small species of fish in the southeastern USA was listed as endangered. A conflict arose because a dam was already under construction within its native range and was scientifically deemed as damaging to its necessary habitat. What came to be known as the snail darter controversy gained national attention. A U.S. Supreme Court ruling prohibited dam completion, which was then overridden when Congress exempted the Tellico Dam from provisions of the ESA.

SAVE THE ENDANGERED ANIMALS

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

BENGAL TIGER
ASIATIC LION
ONE HORNED RHINOCEROS
BLACKBUCK
BISON
MACAQUE
KASHMIRI STAG

"Decoding DNA: Evolution's Playbook and Medicine's Future Roadmap"

PHOENIX
SECTION III



Evolutionary Insights

LEGACY OF SVANTE PÄÄBO

Unravelling mysteries of Human Origins

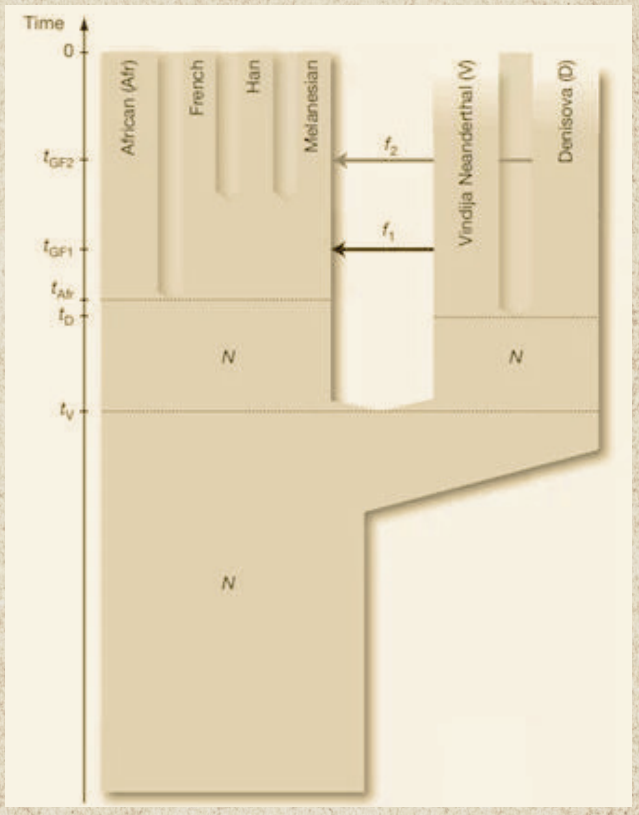


Understanding human origins is vital for comprehending our biological heritage and the factors shaping evolution. It illuminates behavioral and cognitive development, informs medical research, fosters appreciation for biodiversity, and enriches our understanding of ourselves and our relationship with the environment. Paleogenomics has provided valuable insights into human evolution, migration patterns, and the genetic diversity of past populations.

Paleogenomics is a field of study that combines principles of genetics and paleontology to investigate the genomes of ancient organisms, including extinct species such as Neanderthals and mammoths. Researchers in this field extract and analyze DNA from ancient remains to understand genetic relationships, evolutionary history, and adaptation to environmental changes over time.

In the intricate tapestry of human evolution, one name that shines brightly is Svante Pääbo. The 2022 Nobel Prize in Physiology or Medicine rightly honours this Swedish geneticist for his discoveries concerning the genomes of extinct hominins and human evolution.

Svante Pääbo's groundbreaking work in the field of ancient DNA analysis has revolutionized our understanding of human evolution, particularly through the sequencing of genomes from extinct hominins such as Neanderthals and Denisovans. Overcoming significant technical challenges, Pääbo's research has shed light on the genetic makeup of modern humans, highlighting the complexity of our ancestry and providing insights into the traits that make us uniquely human.



Pääbo successfully extracted and analyzed Neanderthal mitochondrial DNA (mtDNA) from a humerus bone, revealing unique genetic variants. Subsequent studies further elucidated Neanderthal genetic diversity and suggested minimal genetic contribution to early modern humans. Transitioning to sequencing the Neanderthal nuclear genome, Pääbo's team utilized innovative techniques, paving the way for further studies, and revealing evidence of interbreeding between Neanderthals and early Homo sapiens.

Pääbo's work also led to the discovery of Denisovans, a novel hominin group, through the analysis of Distal phalanx of finger bone found in Denisova Cave. Comparative analyses with modern human genomes revealed evidence of interbreeding between Denisovans, Neanderthals, and early modern humans, highlighting the intricate web of human evolutionary history. Remarkably, Denisovans contributed genetic material to present-day Melanesians, suggesting a vast geographical range and complex interbreeding events.

Denisovans are a group closely related to Neanderthals, diverging from a common ancestor about half to two-thirds as far back in time as the common ancestor of Neanderthals and modern humans. After Denisovans split from Neanderthals, there was interbreeding between Neanderthals and the ancestors of present-day non-Africans. Subsequently, Denisovans intermixed with the ancestors of Melanesians, but this interaction didn't impact other non-African populations.

The availability of high-coverage genome sequences from Neanderthals and Denisovans has provided unprecedented insights into human evolution, population dynamics, and interbreeding among archaic hominins. Studies have identified genetic variants unique to modern humans, offering valuable opportunities to understand human physiology and susceptibility to diseases.

Archaic gene flow has introduced alleles beneficial for survival in new environments after the migration of modern humans out of Africa, as evidenced by genes associated with high-altitude adaptation and resistance to viral infections. Additionally, associations between Neanderthal-derived alleles and disease-relevant phenotypes underscore the influence of archaic gene flow on human physiology.

Access to archaic genomes enables the identification of critical genetic features that distinguish modern humans from archaic hominins, offering valuable insights into what makes us uniquely human. Pääbo's ongoing research focuses on elucidating these genetic features, shedding light on human physiology and medicine.

In conclusion, Svante Pääbo's pioneering contributions to ancient DNA analysis have unraveled the complexities of human evolution, providing invaluable insights into our ancestry and genetic makeup. His work has opened exciting possibilities for studying the impact of archaic gene variants on present-day human physiology, ultimately advancing our understanding of what makes us uniquely human.

UNLOCKING THE GENETIC CODE: WHAT DNA TELLS ABOUT ANIMAL EVOLUTION

- DARSHAN MITTAL (FZH)

Before going into the depth of this topic, let's first shed some light on animal evolution. The first animal evolved from an unknown single celled ancestor in the Precambrian period. Recently, the identification and characterization of genomic and cellular traits of some protists containing genetic similarity to animals to an extent have shed light on the origin of animals. Comparisons of animals with these unicellular relatives allow us to reconstruct the first evolutionary steps towards animal multicellularity.

When considering the evolution of genetic code, we proceed under several basic assumptions that are worth spelling out. It is assumed that there are only 4 nucleotides and 20 encoded amino acids and each codon is a triplet of nucleotides.

The existence of variant codes and the success of experiments on the incorporation of unnatural amino acids indicate that the genetic code has a degree of evolvability.

A mutation is a change in DNA. An organism's DNA affects how it looks, how it behaves, and its physiology, so a change in an organism's DNA can cause changes in all aspects of life. In addition to studying mutations, scientists are also investigating non-coding regions of DNA. Previously considered "junk DNA" with no apparent function, these non-coding regions are now recognized as important regulators of gene expression. By analyzing these regions, scientists can gain a deeper understanding of how genes are turned on and off during development, providing valuable insights into the evolutionary processes underlying the diversity of life. Mutations are also essential to evolution.

Our genes determine our bodies. They provide the biological information that makes us who we are. Although future developments in science and medicine may allow us to change parts of ourselves, right now we cannot change our genetic code.

DNA has only come to be understood over the last century. The technology has been improving and has allowed scientists to not only map out entire genomes of many species, but they also use computers to compare those maps. By entering genetic information of different species, it is easy to see where they overlap and where there are differences.

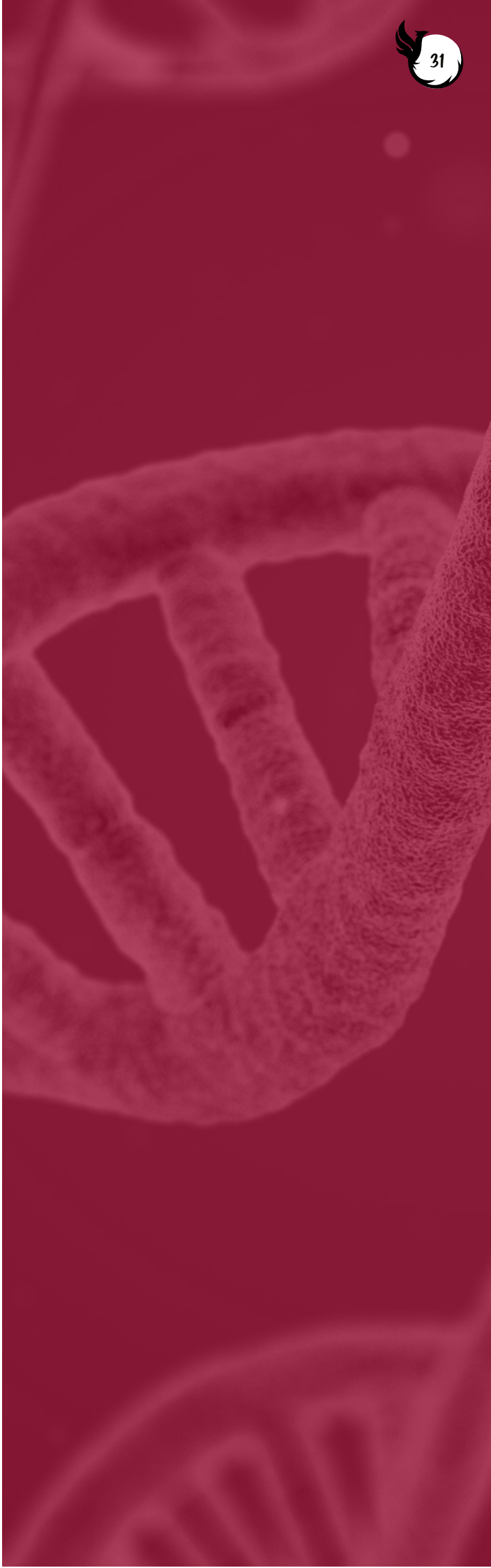
The more closely related species, the more their DNA sequences overlap.

By examining the DNA of various animal species, scientists have made groundbreaking discoveries about evolution. For instance, DNA analysis has revealed that humans share a significant portion of their genetic code with other primates, such as chimpanzees and bonobos. This finding supports the theory of common ancestry, suggesting that humans and other primates evolved from a common ancestor millions of years ago.

For e.g. when we compare DNA of Chimpanzee and human, we found that they have 96-98 % DNA is similar. Chimpanzees have 48 chromosomes and humans have 46 chromosomes but some research says, the genes of extra 2 chromosomes present in chimpanzees is also present in 46 chromosomes of humans. Means during evolution, 2 genes disintegrate and mix with the remaining 46 chromosomes.

The larger the percentage of differences in DNA between 2 species, the greater the amount of time the 2 species have been separate.

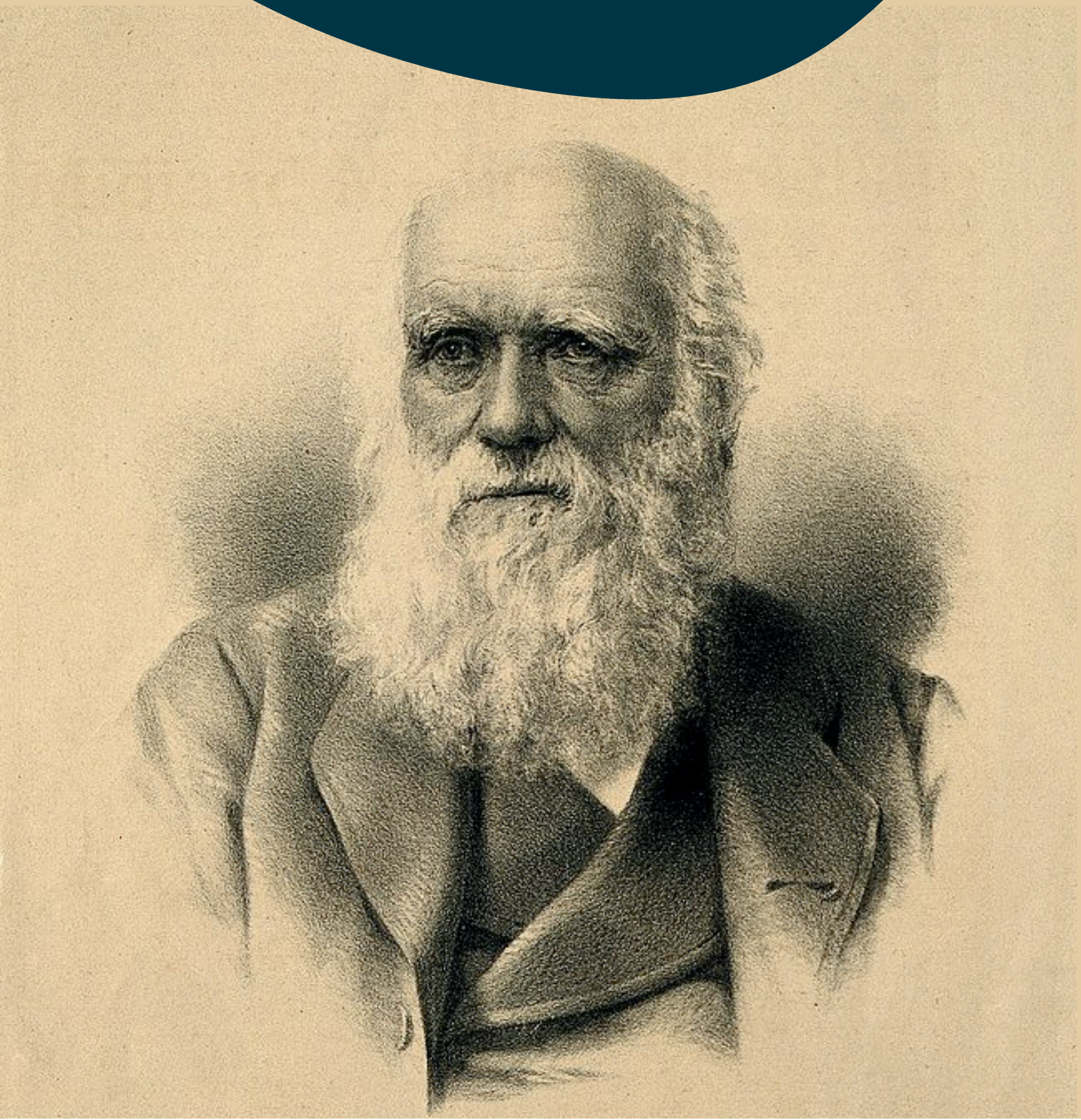
In conclusion, DNA holds the secrets of animal evolution. Through comparative genomics, the study of mutations, and the exploration of non-coding regions, scientists are unlocking the genetic code and gaining new insights into the evolutionary history of animals. As science enthusiasts, we have the privilege of witnessing groundbreaking discoveries and advancements in this exciting field, expanding our knowledge of the intricate web of life. By studying DNA we can also find that many species which are different in morphology but genetically are similar (for e.g. Coyote and domestic dog), which help us in understanding evolution.



DARWINIAN MEDICINE:

AMALGAMATION OF EVOLUTIONARY BIOLOGY WITH MEDICINE

-KRITIKA (TZH)



Evolutionary medicine, also known as Darwinian medicine is a field that explores the origins of human diseases through the lens of evolution. By examining the evolutionary history of diseases, researchers have given explanations for conditions ranging from sickle cell anemia to cancer, shedding light on why certain diseases persist in human populations. By embracing evolutionary principles, we can pave the way for transformative advancements in medicine and public health, ushering in an era of personalized and evolutionary-informed healthcare.

There are three key evolutionary explanations for human diseases and explore how this knowledge can revolutionize medicine.

Mismatched Genes and Environments: The Hemochromatosis

An intriguing evolutionary hypothesis suggests that mismatches between genes and environments can lead to disease. As humans transitioned from ancestral environments to modern settings, genetic adaptations that once conferred advantages may now predispose individuals to ailments like diabetes, cardiovascular disease, and hemochromatosis. The C282Y mutation associated with hemochromatosis, for example, likely arose as an adaptation to iron-poor diets prevalent during the shift from hunter-gatherer to agrarian lifestyles. However, in today's era of abundant nutrition, this mutation manifests as a disorder due to iron overload, highlighting the complex interplay between genetic heritage and environmental context.

Evolutionary medicine also offers insights into psychiatric disorders, suggesting that conditions like anxiety may stem from mismatches between modern stressors and ancient coping mechanisms. By understanding the evolutionary roots of mental health issues, we can explore novel approaches to prevention and treatment, although these ideas remain speculative and require further research.

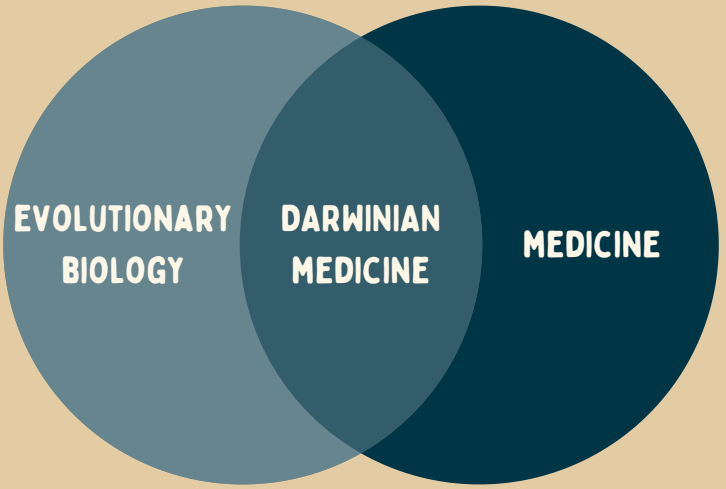
Heterozygote Advantage: The Sickle Cell Mystery

In heterozygote advantage, wherein certain genetic variations confer advantages to carriers while posing risks to those who inherit two copies of the allele.

A classic example is sickle cell anemia, where individuals heterozygous for the HbAS allele exhibit enhanced resistance to severe malaria. This protective mechanism against a deadly disease outweighs the detrimental effects of sickle cell disease in homozygous individuals, illustrating the complex interplay between genetic diversity and survival in malaria-endemic regions.

Antagonistic Pleiotropy: Aging and Reproductive Success

A fascinating concept in evolutionary biology is antagonistic pleiotropy, where genes influence multiple traits with conflicting effects on fitness. This phenomenon has implications for aging, suggesting that genes promoting reproductive success early in life may contribute to accelerated aging later. Understanding these trade-offs sheds light on the evolutionary mechanisms underlying lifespan and disease susceptibility. Genes that promote reproductive success early in life may also contribute to accelerated aging later in life, highlighting the complex evolutionary dynamics at play in shaping human health.





WHAT AM I?

Read the riddles, guess the animal

1. I'm a mammal, but I lay eggs. I live only in Australia, and I'm known for my ability to curl up into a ball when threatened.
What am I?

2. I'm a bird that can't fly, but I used to have wings. I live in New Zealand and I'm related to parrots.
What am I?

3. I'm a reptile that can glide through the air. I have flaps of skin stretched between my legs that help me glide from tree to tree.
What am I?

4. I'm a primate that spends most of my time in trees. I have a long tail that I use for balance, and I'm known for my large, expressive eyes.
What am I?

5. I'm a marine mammal that used to live on land. I have flippers instead of limbs and a blowhole on top of my head.
What am I?

6. I'm an insect that looks like a leaf. I have evolved to mimic the appearance of a leaf to avoid predators.
What am I?

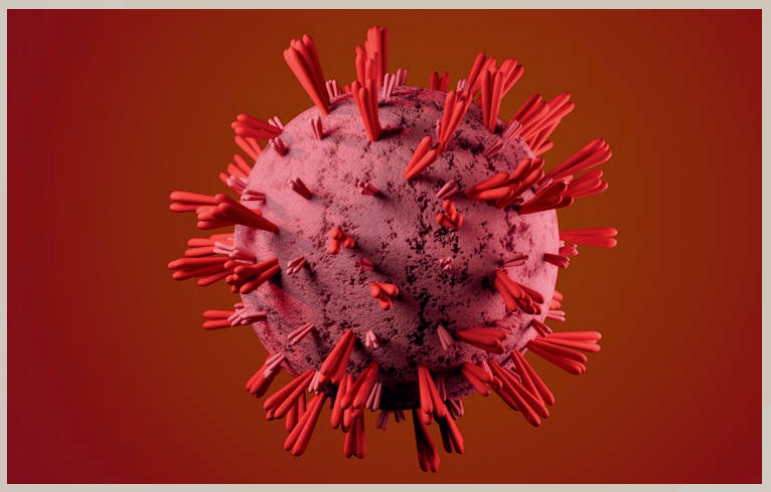
ANSWERS:
1.Echidna or platypus 2.Kiwi 3.Draco lizard
4.Lemur 5.Whale 6.Leaf insect or phyllidae

Genetics & Zoology

PHOENIX
SECTION IV







"Bridging Genetics and Zoology for a healthier future"



DELETE AND SURVIVE: TO DEFEND THE GENOME, THESE CELLS DESTROY THEIR OWN DNA

-ASHUTOSH (SZH)

On April 26, 2003, during a solo descent of Bluejohn Canyon in southeastern Utah, Aron Lee Ralston, an American mountaineer, dislodged a boulder, pinning his right wrist to the side of the Canyon wall. After five days, he had to break his forearm, amputate it with a dull pocket knife to break free, making his way through the rest of the canyon.

Now, if Aron didn't self-amputate himself and break free from there, he would have perished there itself without any source of food, water and help from anywhere. Similarly, Marie Delattre, a cell biologist at the École Normale Supérieure in Lyon, was studying the sexual reproduction practices of microscopic worms when she noticed something unexpected. Under the microscope, an embryo of the nematode *Mesorhabditis belari* was dividing as it should, progressing from one cell to two to four. But inside a few cells she saw an inexplicable spray of DNA fragments floating around where they didn't belong.

Apparently, the embryo was not dead, but it was doing something that usually dead cells do: DESTROYING ITS GENOME. École stated that this is not accidental and all the embryos did this. What she had stumbled across, and what she and her lab described in a paper published in August in Current Biology, was an instance of Programmed DNA Elimination (PDE), in which organisms seem to purposefully eliminate portions of their genome. It's an odd phenomenon that flies in the face of the precept that a genome is a vital, sacrosanct resource to be passed on faithfully to the next generation. But PDE can be so difficult to spot that no one knows how common it really is. Programmed DNA elimination is not the only way in which DNA portions are sacrificed or lost but there are others in this gang too but with different purposes to fulfil.

·UNSELECTIVE ELIMINATION OF GENETIC MATERIAL

Ionising radiation, cytotoxic agents, or deficiencies of some substances can lead to the spontaneous elimination of genetic material from the cell nucleus. Such stress factors can initiate double-strand breaks, leading to the formation of acentric chromosome fragments that are unable to attach to the spindle during mitosis and remain in the cytoplasm. Inactive X and Y chromosomes are frequently lost in ageing cells.

PROGRAMMED ELIMINATION OF GENETIC MATERIAL IN DIFFERENT ORGANISMS

In contrast to the unselective elimination of genetic material, programmed elimination of genetic material is highly specific for eliminating DNA sequences and usually occurs during specific stages of ontogenesis.
However, Delattre and her lab had concerns only with PDE happening in M. belari. The researchers looked at the DNA of an adult worm and compared the genomes of M. belari's germline cells with the genomes of the worm's somatic cells. The somatic genomes were missing long strings of sequences present in germline genomes. Sometime between the embryo's growth from seven cells to 32, huge chunks of DNA had vanished. In total, the nematode deleted a whopping one-third of its genome. The deleted sequences weren't selected at random. There was a pattern: They were mostly highly repetitive stretches of DNA that didn't code for genes at all, Delattre found.

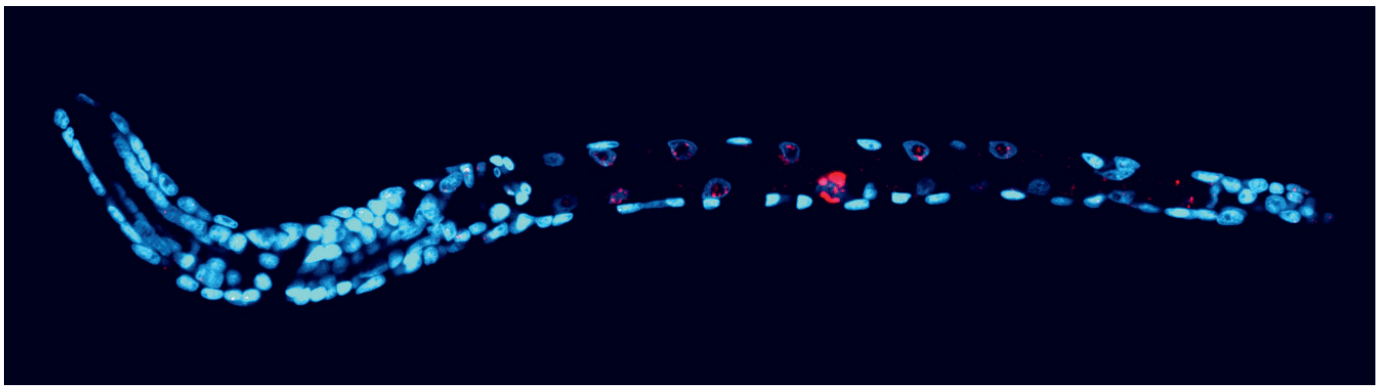


Similar stretches of repeating or noncoding sequences pack the genomes of eukaryotic cells. Satellite DNA, for instance, forms structures such as heterochromatin and centromeres that package DNA while others regulate gene expression. However, some repeated sequences do not contribute to their host's survival and may even interfere with it. That group includes transposons, self-replicating DNA which mounts to molecular grand larceny by stealing cell's machinery to copy themselves by the thousands or millions, as well as a waste of the time and energy that the cell must spend to supress these sequences.

Cells routinely curb transposons with epigenetic marks that silence them, or by intercepting and destroying their RNA. But some species, such as M. belari, may remove them entirely through PDE.

However, transposons can be helpful too which makes Delattre not convinced that the transposons are the whole story and she might not be seeing something present right under her nose while she asked "why would you get rid of [parasitic DNA] just in somatic cells and not the germline?", even though the repetitive DNA that M. belari deleted was harmful.

Besides fighting parasites, PDE may help cells streamline their genomes as they progress through different life stages. Many genes that are critical for an organism's embryonic development are unnecessary in maturity. If a cell can rid itself of those genes, why wouldn't it for efficiency's sake? A larger genome is harder to copy and maintain, and inappropriately expressing developmental genes could cause problems. Thus, on a translational level, energy wastage to synthesize and package unnecessary proteins can be avoided as mechanisms to regulate the important proteins can be kept minimalistic. In somatic cells, which don't need to pass a full genome along to offspring as germline cells do, removing unessential elements could be a winning evolutionary strategy.

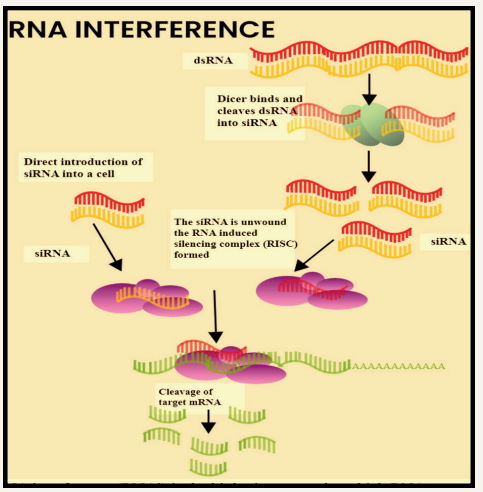


The deleted genome fragments (red) survive only in germline cells in the worm's gonads; those fragments are absent from the nuclei of nearly all other body cells (blue)

RNA-i BASED THERAPIES

-Prashant (SZH)

RNA INTERFERENCE is The biological process by which RNA molecules induce sequence-specific inhibition of target gene expression or translation. The ability of interfering RNA to silence genes was discovered in the 1990s by American scientists Andrew Z. Fire and Craig C. Mello, who shared the 2006 Nobel Prize for Physiology or Medicine for their work.RNAi was demonstrated to occur in mammalian cells in 2001. Rapid development in the study of RNAi has driven it from an experimental technology to a powerful tool for therapeutic development. In recent years, RNAi has become more widely applied in gene silencing and drug development because of its high level of specificity, minor side effects, and ease of synthesis



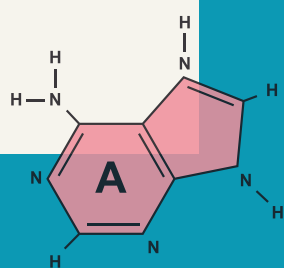
Therapeutic applications of RNAi

Therapeutic approaches such as small-molecule inhibitors and monoclonal antibodies targeting identical proteins have been successful in many cases. However, relatively few of these drugs are available, in part because identification of specific agents to disrupt protein function has been challenging. RNAi overcomes these difficulties by targeted silencing of genes of interest. Regulatory Non-coding RNAs (ncRNAs) have been demonstrated to either enhance or repress target gene expression, and abnormal expression of ncRNAs is a crucial component in the pathogenesis of cancer and other human disorders. Therefore, RNAi could be applied as a therapeutic to provide transcription-suppressive factors, subsets of kinases, and other signaling molecules to restore the expression of these impaired genes. Comprehensive nucleotide sequence databases have been established, laying a solid foundation for the investigation of RNAi-based drugs.

Cancer

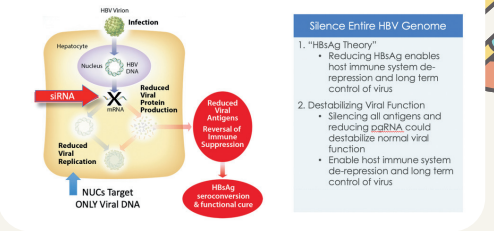
Oncogenes, tumor suppressor genes, and other regulatory genes are all potential targets of RNAi regulation. Targeted silencing of cancer-related genes and their regulators have been the most commonly studied.

Deregulation of MicroRNA (miRNA) is frequently involved in many types of cancer. Strong evidence has shown that eukaryotes contain more ncRNAs than protein-coding genes. Circulating miRNA levels could represent promising biomarkers for early detection and diagnosis of carcinoma. MiRNAs could also predict sensitivity to chemotherapy and radiotherapy in a personalized manner. Preclinical study of therapeutic miRNA mimics and molecules targeting miRNAs (anti-miRs) have shown promising results.



The advantages of RNAi in cancer therapy are effective suppression of the growth of advanced-stage tumors, relatively low cost, and high specificity. RNAi can inhibit multiple genes of various pathways simultaneously, which could be conducive to reducing drug resistance. With the development of more effective delivery systems, RNAi could also be used to develop personalized drugs for specific patients as adjuvants to chemotherapy.

Simplified theory of an HBV RNAi therapeutic



Cardiovascular disease

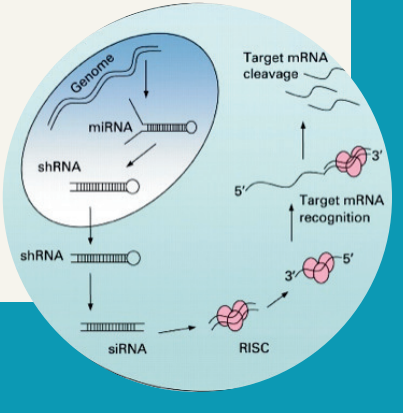
Deregulation of genes and miRNAs in cardiomyocytes and smooth muscle cells has been demonstrated in many cardiovascular diseases. Targeted delivery of miRNA therapeutics has been applied to several cardiomyopathies and related pathologies, such as hypertension, coronary disease, and atherosclerosis. Studies have also suggested the potential of miRNAs as biomarkers in cardiovascular disease for diagnosis and for predicting disease course or response to therapy.

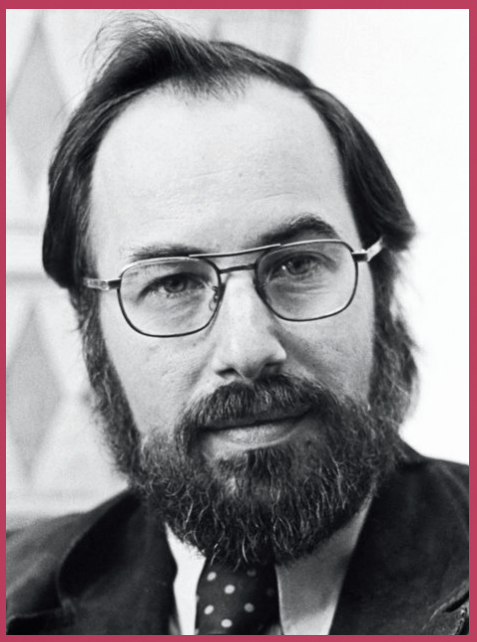
Hepatitis

Patients with any of the three principal types of hepatitis can benefit from RNAi-based therapy. Because of the compact genome structure of the hepatitis B virus (HBV), a single siRNA can silence multiple transcripts, resulting in direct inhibition of HBV replication. In addition, RNAi can stimulate a strong immune response, which can further amplify response to treatment. With regard to hepatitis C virus, which has a much more complicated life cycle than HBV, miRNAs could not only inhibit viral replication but also function as biomarkers for the early detection and staging of liver disease related to hepatitis C, including liver cirrhosis and hepatocellular carcinoma. One of the most well studied miRNA targets is miR-122, a highly abundant, liver-specific miRNA expressed in vertebrates that could facilitate replication of infectious virus in hepatic cells. The miR-122–specific inhibitor Miravirsen is the first miRNA-targeted antiviral drug that has undergone a phase II clinical trial, which prolonged HCV RNA reduction in a dose-dependent manner without evidence of resistance.

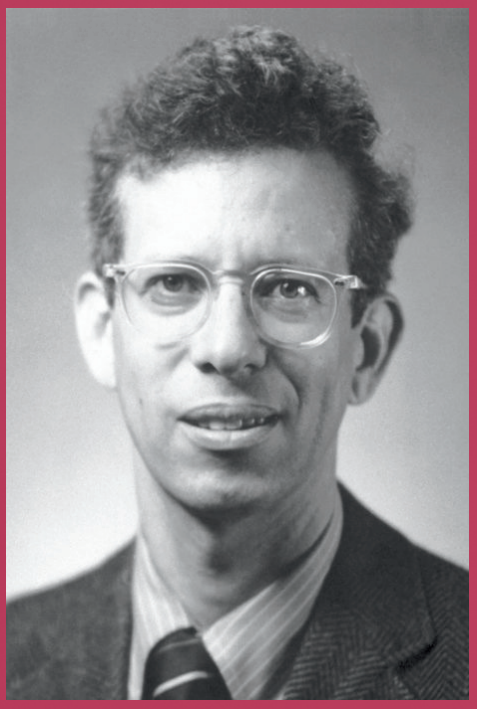
Conclusion and future perspectives

Over the last 15 years, RNAi has been widely applied as a promising therapeutic approach to a number of pathologic conditions. Progress has been made in the investigation of target genes and the development of delivery systems for RNAi. In addition, the efficiency of delivery as well as gene silencing have greatly improved over time. However, challenges remain for the successful clinical application of RNAi-based therapeutics. Safety concerns have been the principal reason that clinical trials of some RNAi therapies have been withdrawn. An ideally designed delivery system is crucial to achieve effective, targeted gene silencing with low or no toxicity in vivo. Future research is expected to focus on addressing these important issues. On the basis of our understanding of the development of RNAi and delivery systems, we believe that these efforts will lead to a new age of molecular therapy in which patients can benefit from safe, efficient, and personalized therapy.





David Baltimore



Howard Martin Temin



Renato Dulbecco

DANCE OF GENETIC MATERIAL AND TUMOR VIRUSES: THE NOBEL PRIZE SAGA OF 1975

-ANUBHAV SHUKLA
(SZH)

In 1975, the Nobel Prize in Physiology or Medicine honored a milestone in cancer research, celebrating the groundbreaking discoveries that unraveled the intricate interplay between tumor viruses and host genetic material. This recognition marked a pivotal moment in the field, highlighting the transformative impact of scientific inquiry on our understanding of cancer biology and therapy.

At the heart of this Nobel Prize-winning work lay a journey marked by perseverance, curiosity, and scientific ingenuity. Dr. Renato Dulbecco, Dr. Howard Temin, and Dr. David Baltimore embarked on a quest to decipher the mysteries of viral-induced carcinogenesis, confronting challenges and setbacks along the way. Their collective efforts would ultimately reshape the landscape of oncology and pave the way for innovative cancer treatments.

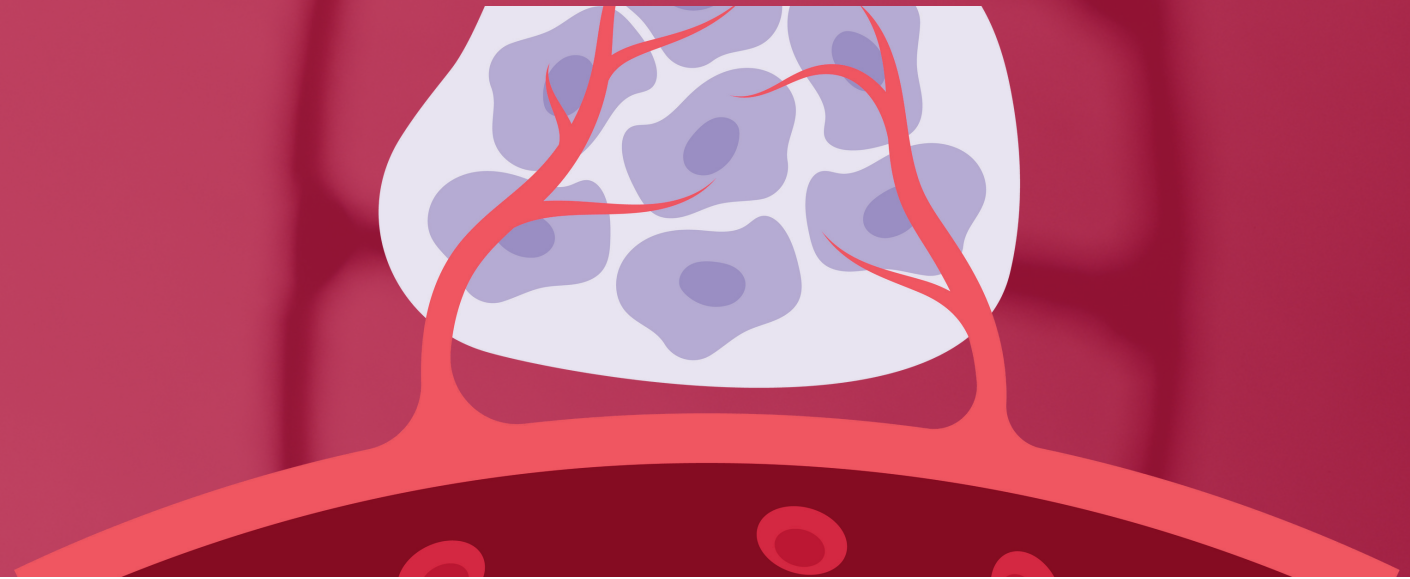
The journey began with Dr. Renato Dulbecco's pioneering investigations into polyomavirus replication. Despite initial setbacks and challenges, Dr. Dulbecco's relentless pursuit of knowledge led to pivotal insights into viral-host interactions. His seminal studies laid the groundwork for understanding how tumor viruses manipulate host genetic machinery to drive malignant transformation.

Meanwhile, Dr. Howard Temin and Dr. David Baltimore pursued independent lines of inquiry that would converge on a groundbreaking discovery: the identification of reverse transcriptase. This pivotal enzyme, initially met with skepticism and skepticism, proved to be the key to unlocking the secrets of viral RNA to DNA conversion. Their groundbreaking research challenged prevailing dogma and reshaped our understanding of genetic information flow.

Yet, the journey was not without its share of failures and setbacks. Dr. Temin's early experiments faced skepticism and criticism, with some dismissing his findings as heretical. Similarly, Dr. Baltimore encountered resistance and skepticism as he sought to unravel the mysteries of reverse transcriptase. However, these challenges only fueled their determination to push the boundaries of scientific knowledge and challenge the status quo.

Ultimately, perseverance, resilience, and unwavering dedication propelled these visionary scientists forward. Their groundbreaking discoveries not only elucidated the mechanisms of viral-induced carcinogenesis but also revolutionized cancer research and therapy. By unraveling the molecular intricacies of tumor viruses and host genetic material, they laid the foundation for targeted cancer treatments and personalized medicine approaches.

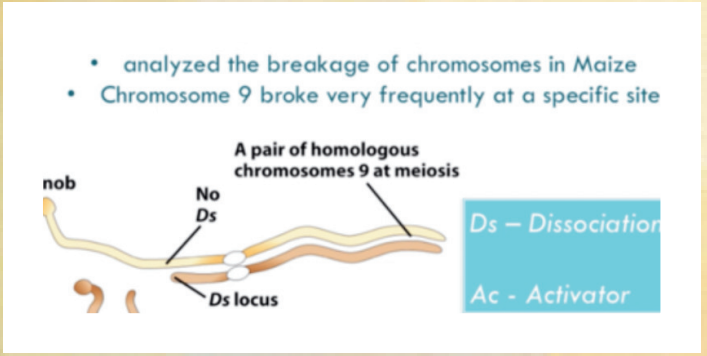
The Nobel Prize in Physiology or Medicine 1975 served as a testament to their extraordinary contributions to science and humanity. It celebrated their tireless pursuit of knowledge, their willingness to challenge convention, and their unwavering commitment to unraveling the mysteries of cancer. Today, their legacy lives on in the countless lives saved and transformed by their groundbreaking discoveries, inspiring future generations of scientists to continue pushing the boundaries of medical knowledge.



MOBILE GENETIC MARVELS: THE NOBEL PRIZE-WINNING TALE OF TRANSPOSONS

-ADITYA SINGH (TZH)

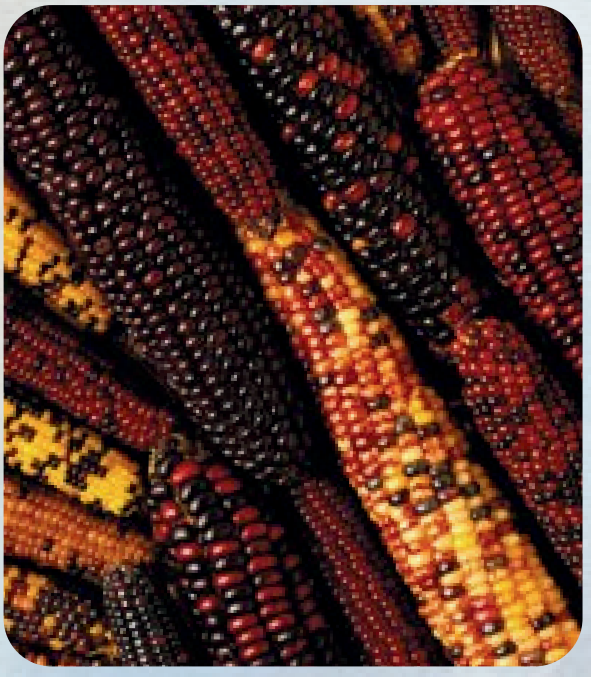




In the intricate world of genetics, where the very essence of life lies in the code written within DNA, there exists a phenomenon that challenges the static nature of genetic information - transposons. These jumping genes, as they are often called, have fascinated scientists for decades, leading to groundbreaking discoveries that eventually earned Barbara McClintock the Nobel Prize in Physiology or Medicine in 1983. Let's dive into the intriguing story of transposons and the journey that led to this prestigious recognition.

Transposons are segments of DNA capable of moving from one location to another within a genome. Initially dismissed as genetic anomalies, their significance was brought to light through the pioneering work of McClintock, a renowned American cytogeneticist. McClintock's research, conducted primarily in maize plants, provided compelling evidence for the existence of mobile genetic elements and their role in shaping genetic diversity.

One of McClintock's key bits of knowledge came from her perceptions of variegated portions in maize, where patches of variety contrasted because of the irregular addition or extraction of transposons. Through careful trial and error and investigation, she showed the way that these hereditary components could impact quality articulation and aggregate, testing the predominant thought of qualities as fixed elements. McClintock's earth-shattering revelations, be that as it may, were met with suspicion and opposition inside established researchers. The idea of portable hereditary components went against laid out hereditary standards and was at first met with incredulity. In spite of confronting extensive resistance, McClintock persisted, refining her speculations and storing up additional proof to help her cases.



The defining moment came when subatomic procedures started to find McClintock's perceptions. During the 1970s, headways in DNA sequencing and hereditary designing gave the devices important to approve and investigate the systems fundamental transposon versatility. Analysts all over the planet started to uncover comparable components in different life forms, affirming the far- reaching presence and meaning of transposons in hereditary evolution. The Nobel Prize granted to McClintock in 1983 perceived her spearheading function as well as catalyzed further examination into transposons and their suggestions. The Result concentrates on discovering that these versatile hereditary components assume essential parts in genome advancement, adding to hereditary variety, transformation, and even illness.

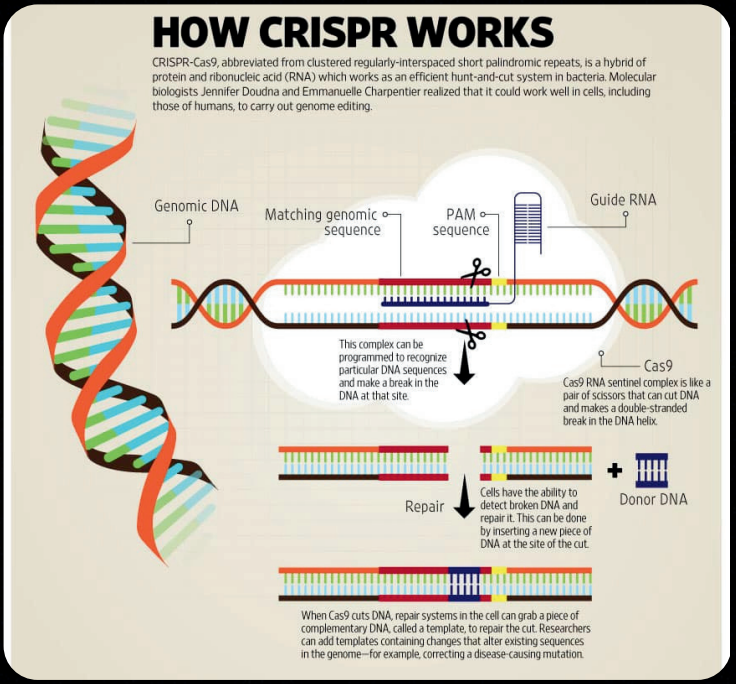
Transposons are now recognized as ubiquitous components of genomes, with diverse types and mechanisms of mobility. They can influence gene regulation, genome structure, and even drive speciation through their ability to induce genetic rearrangements. Moreover, transposons have been harnessed as powerful tools in genetic engineering, facilitating gene transfer and modification in various organisms.

Transposons, aside from their biological significance, have also yielded profound insights into fundamental genetic processes. Their discovery challenged established beliefs, triggering a shift in our understanding of genetic stability and variability. By shedding light on the dynamic nature of genomes, transposons have enhanced our grasp of evolution and molecular biology. Looking forward, research into transposons remains a vibrant field, with implications ranging from basic science to applied biotechnology. Deciphering the intricacies of transposon biology holds the promise of uncovering novel pathways for comprehending and manipulating genetic information, potentially impacting fields like agriculture, medicine, and biotechnology.

In summary, Barbara McClintock's 1983 Nobel Prize serves as a testament to the transformative influence of scientific curiosity and perseverance. Her groundbreaking studies on transposons reshaped our understanding of genetic mobility and laid the groundwork for subsequent investigations in molecular genetics. Transposons stand as an intriguing aspect of genetic exploration, underscoring the dynamic and continually evolving nature of the genetic blueprint stored within DNA.

GENETIC REVOLUTION: UNLEASHING CRISPR'S MOLECULAR SCISSORS

-RHYTHM (FZH)



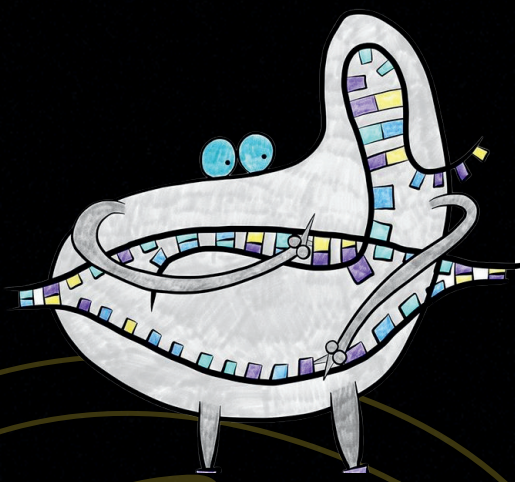
From the smallest single-celled organisms to the largest creatures on earth, every living thing is defined by its genes. The DNA contained in our genes acts like an instruction manual for our traits. With recent advancements in gene editing tools, scientists can change the fundamental features of any organism in record time. They can engineer drought-resistant crops and create apples that don't brown. They might even prevent the spread of infectious outbreaks and develop cures for genetic diseases.

CRISPR is the fastest, easiest and cheapest of the gene editing tools responsible for this new wave of science. CRISPR is actually a natural process that has always functioned as a bacteria's immune system, originally found defending single celled bacteria against invading viruses. CRISPR uses 2 components, the first are short snippets of repetitive DNA sequences called 'clustered regularly interspaced short palindromic repeats' or simply CRISPRs and the second are Cas or 'CRISPR associated proteins' which act like molecular scissors

When a virus invades a bacterium, Cas proteins cut out a segment of the viral DNA to stitch into the bacterium's CRISPR region capturing a chemical snapshot of the infection. Those viral codes are then copied into short pieces of RNA and this binds to a special protein called Cas9. The resulting RNA-protein complex searches for a match to the virus in the cell. If the virus invades again the complex recognises it immediately and Cas9 swiftly destroys the viral DNA protecting the bacterium from the infection.

Today, scientists have figured out a way to hijack CRISPR to target not just viral DNA but any DNA in any organism. With the right tools this bacterial immune system becomes a precise gene editing tool which can alter DNA and specific genes.

Here's how it works in the lab; scientists design guide RNA to match the gene that they want to edit and attach it to Cas9. Like the viral RNA in the CRISPR immune system, the guide RNA directs Cas9 to the target gene, and the protein's molecular scissors snip the DNA. Once the DNA is cut, the cell will try to repair it. But this process is bound to have many mistakes. However, if the scientists add a separate sequence of template DNA, the cellular proteins can perform a different DNA repair process called homology directed repair.



CRISPR-Cas9 is being employed to study various genetic diseases, such as haemophilia, Duchenne muscular dystrophy, α1-antitrypsin deficiency, and hearing loss. This shows the application of this system in medical science. Hematologic diseases have previously been difficult to treat via genome manipulation. Studies in recent years demonstrated that CRISPR-Cas9 can correct genetic errors in hematopoietic stem cells that give rise to hematologic diseases. CRISPR-Cas9 is a powerful tool that allows scientists to change the genes of organisms. Thus, this technology raises big ethical questions. It's up to us to decide whether to leave CRISPR in the single-celled organisms or make it head into labs and hospitals.

SRI VENKATESWARA COLLEGE

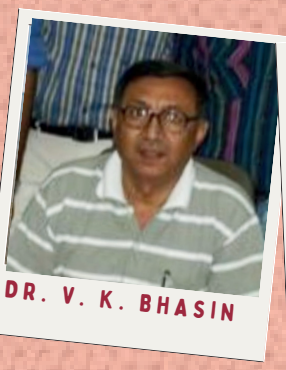
UNIVERSITY OF DELHI

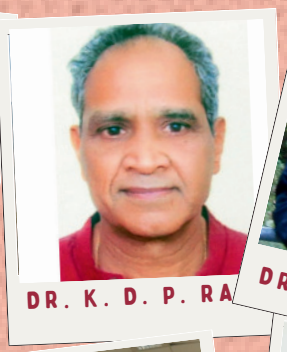
DEPARTMENT OF ZOOLOGY

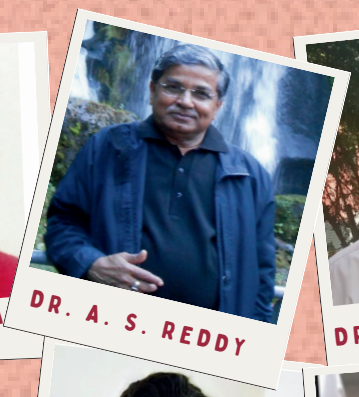


YEARS OF EXCELLENCE

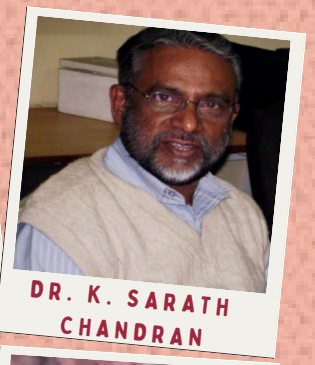
Down the memory lane with Educators...

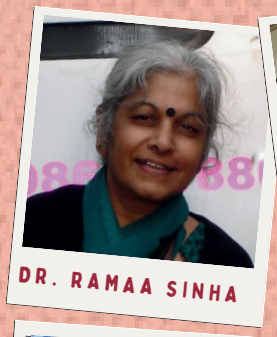

DR. V. K. BHASIN


DR. K. D. P. RA


DR. A. S. REDDY


DR. R. K. SAXENA

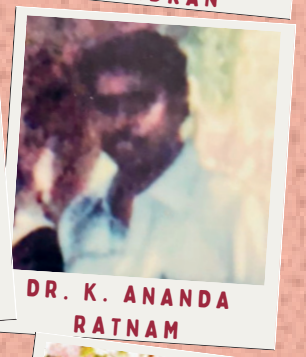

DR. K. SARATH CHANDRAN

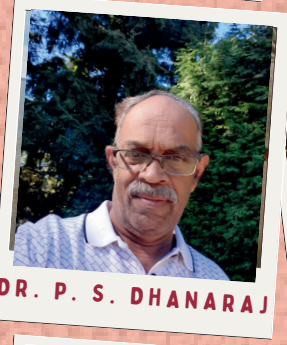

DR. RAMAA SINHA


DR. K. V. GIRI


DR. RUP LAL


DR. V. V. S. N. RAO


DR. K. ANANDA RATNAM

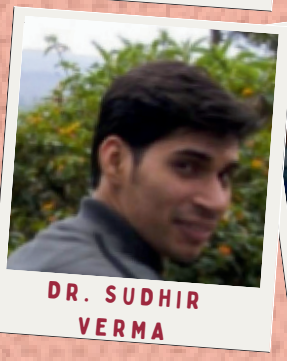

DR. P. S. DHANARAJ


DR. AJAIB SINGH


DR. MANSI VERMA


DR. KAVERI CHAKRABARTY


DR. MANOJ JAISWAL


DR. SUDHIR VERMA


DR. BRONSON KR.


DR. RIYAZ BAKSHI


DR. VAGISHA RAWAL


DR. SADQUA SHAMEEM


DR. AARTI SHERAWAT


DR. NAWAZ ALAM


DR. HIMANI KHURANA


DR. POOJA VIJAY

DR. R. C. SAXENA
DR. E. VIJYAN
DR. VIDYA GANAPATHY
DR.P. VISHWANATH
DR. S.SHIVAJI
DR.S.MEEKANSHI

WORDS OF WISDOM

Students, like butterflies, fluttered through the years,
Nurtured by mentors, erasing all fears.



Dr. A. Sankara Reddy

(Padmasri Recipient-2009)
Fmr. Principal, Sri Venkateswara College
Fmr Educational Advisor TTD

I am extremely happy to learn that the Zoology Department of Sri Venkateswara College, Delhi University, is celebrating its Golden Jubilee celebrations, commemorating with its 50-years of establishment since 1973. Heartiest Congratulations to one & all associated with its establishment and its continuity with yarns of excellence through its proud period of eminence.

The vision of Late Dr. V. Krishna Murthy, the former Principal & the commitment of Late Dr. C. Anna Rao , the Chairman of College Governing Body and with their combined efforts, a new era of public service was initiated through the introduction of B.Sc., (Hons) programs in Zoology, Botany & Chemistry in one go at Sri Venkateswara College in 1973.

What started out to be with 2 Teachers in 1973 now have a comfortable strength of 17 highly qualified teachers. Great going indeed!!

Recalling the days of innovation in Teaching & Research in the department, it all started with the return of Dr. KDP Rao from USA and with him the introduction of his lectures through "power point presentation", a first in the College itself. Then comes the elements of Research in a small space with Dr. Rup Lal, who later joined DU as Associate Professor.

I am very happy to learn that, presently Dr. Vartika Mathur & Dr. Omprakash (who joined in 2006 on permanent basis) are spearheading the research activities. Dr. Vartika Mathur was the first to be credited with the prestigious Nuffic Fellowship (2008-'12) in collaboration with Waganingen University, Netherlands and is having several National & International Research Collaborations in Insect-Plant interactions. Equally laudable contribution is the Research work carried out by Dr.Ompraksh in Limnology. It's this kind of continuous research in Zoology that Dr.Vartika Mathur, Dr. Om Prakash & Dr. Anita Verma that they have been promoted as Professors in the Zoology Dept. My heartiest congratulations to them.

This is just the beginning for continuous growth & Success of this department dear younger friends. The baton is put into your firmer grip to behold your zoology department and lead to greater heights. Nothing stops us if we are determined & dedicated to our profession and to our faith of achieving our dreams & goals.

I wish you all the Best & Good endurance all through the year of celebrating the "Golden Jubilee year of celebration of the Zoology department in Sri Venkateswara College. Thanking you & with warm wishes to one & all !!

Dr. Durgaprasada Rao Khandavilli (K.D.P.Rao)



I consider an honor and privilege to offer this brief write-up for the Golden Jubilee Celebration booklet of the Zoology department at Sri Venkateswara College (SVC), University of Delhi (DU).

Since my professional career began with the inception of the Zoology department at SVC, my career growth intertwined with that of the department.

In my view, there are two kinds of teachers – "born" teachers and "created" teachers – and I belong to the latter. At the completion of my Ph.D. from DU, my initial focus was mainly on research, in the field of insect biochemistry.

The postdoctoral assignment at Marquette University, Wisconsin, U.S.A., in addition to the research career, gave me an opportunity to sit in Developmental Biology classes and experience the teaching methods in the US. The pedagogical difference in India and the U.S. struck me immensely and opened my eyes to the improved ways of teaching - learning process. I understood the need to change from a passive learner to an active one.

Upon my return to India in 1973, destiny opened the doors to my teaching career at SVC, DU in 1974. The fledgling department and ever-enthusiastic Principal, (late) Dr. V. Krishnamoorthy gave me enormous opportunities to grow as a committed teacher while contributing to the growth of the department. I am ever grateful to the SVC.

Some of the fundamental truths my teaching career exposed me to:

- I realized that an effective teacher in the day has to be an enthusiastic and inquiring learner at night and it is a continuous process throughout the career;
- Group of learners in a class is never homogenous and a good teacher has to be mindful of this and fine-tune the teaching method to accommodate this anomaly;
- It is more important to train the students how to learn than only to teach what is prescribed in the syllabus, thus making them "active inquirers" than "passive receivers."

By the mid-eighties, thanks to my sustained exposure to the continuously developing pedagogy at UW, Madison, U of Arizona, and others in the U.S., I began to introduce technology into my teaching. I am grateful to the department and the college which provided me the necessary equipment to the changing needs of my teaching – from overhead projectors to the remote-controlled audio-visual equipment installed in the lecture theaters. These advances enthused not only the teacher in me but my students as well. My gratitude to the college reached its pinnacle when I was rewarded with Best Teacher Award in 2005.

Some of the salient directions of my teaching career:

- I promoted teamwork spirit in students by dividing the honors class into groups. I would give them challenging topics to dig deeper on their own and make power-point presentations of their findings. This promoted research skills, public speaking and communication techniques in them and their ability to critique the findings of their peers.
- Realizing the importance of students' assessments in the growth of a teacher, I used to conduct anonymous assessments of me as a teacher every year. The observations and comments of my students contributed immensely to my growth as a teacher.
-
- Firmly believing that the teacher's job is not confined to the four walls of classroom, I conscientiously made myself available to my students to discuss a plethora of issues, personal, societal, and professional, that they needed guidance with.
- My acquired skills as an educationist came in handy in fulfilling additional roles as assessor for NAAC and faculty trainer to one of the school boards.

At 81 years of age, I am able to look back at my professional life at SVC fully satisfied and this is made possible by the management at SVC, the teaching and non-teaching colleagues of the Zoology department, and most importantly my students who reposed immense faith in me as their teacher, guide, and friend. I am grateful to all of them.

Dr.Rajesh Kumar Saxena



Reaffirm my faith in the phrase “Quality admits no Compromise”
The onset of our journey starts with the fond memories of Dr. V Krishna Moorthy, Principal of Sri Venkateswara College. He was Professor in Chemistry Department of Delhi University and had gone to England on some research assignment. He was offered “Principal Post” and was appointed in absentia. On return he undertook the formidable task to establish Science Department in Sri Venkateswara college. Before 1973 Venkateswara college was operating from an Andhra School Building situated at Rouse Avenue and had only Arts Faculty.

Under Dr. Moorthy’ aegis the College was shifted to a new building at beautiful location in Dhaula Kuan. In the beginning University gave only B.Sc. Pass Course. Being proactive and a visionary he selectively appointed the best and talented young teachers to have robust infrastructure of the Science Departments. Being exceptionally bright young and good in their subjects each of these appointed teachers later proved the farsightedness of Dr. Krishna Moorthy.
First phase of teachers so appointed in department were Dr. R. C. Saxena, Dr. K. D. P. Rao, Dr. Vijyan and Dr. V. K. Bhasin. In year 1975, University gave B Sc (H) Zoology Degree Course. It was the time when a new brigade of young dynamic teachers Dr. R K. Saxena, Dr A S Reddy, Ms. Vidiya Ganapathy, Ms. Rama Sinha, Dr Viswanath and Dr. Sarath Chandran were appointed. I remember in those days, the college used to start at 9am sharp and we were supposed to be in college till 5pm. Adding to this even on Sundays we were expected to come to college to play Cricket Match with Dr. V Krishnamoorthy ji as captain of our team. There was no chance to show negligence.
Dr. Krishna Moorthy was a very strict disciplinarian. He usually used to take round in the science block to check whether the classes are being held properly. There used to be no scope to come late to the classes or miss the classes. I would say his strictness and tough administration played pivotal role in bringing college to the Limelight and discipline. I remember in 1977 when I got married and had taken leave for certain period. Even before the expiry of the leave I was informed to join on the expiry of leave leaving no scope for me for further extension.

It was for the first time that Department of Zoology Delhi University had given B Sc (H) Zoology to the handful of colleges. Earlier to these Hons classes were taken by the University professors in the main Department of University. It became a prestige point now for college teachers to show that colleges can also run this Course equally well. No doubt the theory and practical syllabus of Hons course was heavily loaded. I accepted to take both theory and practical classes of first year Hons. I remember still how I used to manage this. For theory classes, I would draw figure on the black-board charts with coloured chalks. I always had the conviction that if you supplement your lecture with hand drawn diagrams, it will be easy for the students to comprehend . In practical classes I usually used to demonstrate the dissections and help students in doing it, so that they are able to master it.

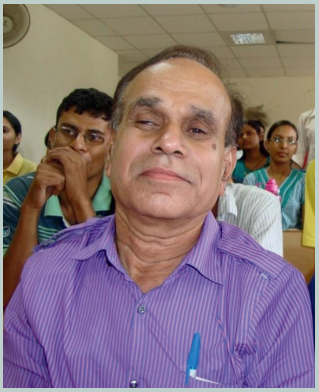
I would never leave students unsatisfied. That was the reason that I always vouched for perfection from students. This really worked like magic. Once an External examiner for BSc H insisted on giving dissection of Unio Nervous System to first year students. He was quite confident that I would ask him for a change to simpler dissection because students would not be able to do dissection. Sarcastically he asked me if you want, I can change the dissection in question paper. I told him sir don't worry let us see how they perform. To his surprise, the students did the dissection very well and displayed it nicely with black paper. Hesitatingly he asked Rajesh can I take a dissected and displayed unio to show to my students. This incident made me very popular among university colleagues. Among the new teachers joining in later years Dr. Anita Verma used to share practical Classes with me. I think our combination went on for very long time. I want to mention here that I used to be very busy with college administrative job (being Bursar) so I usually used to request her to oblige me by signing the practical record of the students. It was a matter of great pride when the result of the first batch of Zoology BSc H students admitted in 1975 was declared out in 1978. The university department of Zoology was stunned to know that the student of B Sc (H) Zoology of Sri Venkateswara college has bagged Gold Medal.

Another Era of golden period initiated when Dr. A S Reddy a pioneer and an excellent teacher of zoology department became the Principal of SV college. By this time the college had earned its reputation in the Academic. He became instrumental in bringing a good number of popular biological science courses to college. i.e., Bioinformatics, Biological sciences and Biochemical technology etc. The college started multifold development not only in adding New Blocks to the old infrastructure. During his tenure a fully-fledged Auditorium was constructed, a common students Hostel was constructed for both girls and boys. Under the dynamic leadership of Dr Reddy, the college got the best Accreditation as a top-rated institution. It was during this time Dr. A. S. reddy was awarded Padmashri award.

My contribution to the college was not only restricted to the Academics or upliftment of Department but also to the cultural and extracurricular activities. I held several important key portfolios such as Bursar of the college, Secretary staff counsel ,secretary staff Association etc. Nexus a mega Extravaganza event has lit the name of Sri Venkateswara college in tinsel world.

Another remarkable achievement of Dr A S Reddy is the Pratishtha of the statue of Lord Venkateswara in the college premises. The Sri Venkateswara college an institution of learning by now has become a temple of learning for the students. The serene atmosphere in the college, fragrance emitting from temple purify the ambience of the college and arouse the feeling of obeisance to the Lord.

Dr. K.V. Giri



I feel proud and happy to pen down few points about zoology department of Sri Venkateswara College, New Delhi for celebrating this year.

College has started zoology in three different branches. 1) B.Sc. (Hons.) in zoology; 2) B.Sc. (general, "B" group pre-medical) and as subsidiary subject in B.Sc. (hons.) botany in 1973. I was one among the few teaching staff members of the department during this period. I joined in college in 1977.

Initially I was given suggestions by seniors about how to manage classes. Especially to handle practical classes seniors used to demonstrate dissections before entering into class. Soon I became independent and adjusted to the atmosphere.

Later in 2003 college has started B.Sc. (hons.) in biological sciences in collaboration with departments of zoology, botany, Biochemistry, and chemistry departments, also university has modified B.Sc. B group into life sciences.

There were few individual differences among staff. But when it comes to department/ classes, students, staff remain united always. All teachers have taken teaching as 'passion' rather than duty bound.

Coming to student level. Most of our students are regular in attending classes. They used to contact teachers outside class for doubts academically and other extra-curricular activities. Teachers and students' relation remained in good harmony.

Departmental activities;

1. Zoology association; conducted lectures by eminent scientists and professors from Delhi university, AIIMS, JNU, NIHFW, FPI and other places.
2. Educational trips were conducted to various places like wild life institutes. Sanctuaries and national parks
3. Interactive programmes were conducted between educational institutions in Delhi and Gurugram.
4. Our students have participated in various extra-curricular activities like debates, cultural programmes, and sports inside and outside college.

Achievements of staff:

1. Dr. K.D.P. Rao and Dr. V.K. Bhasin have gone on study leave.
2. Dr. S. Shivaji has joined as scientist in CCMB at Hyderabad
3. Dr. V.K. Bhasin and Dr. Rup Lal have joined as professors in zoology department of Delhi university.
4. Dr. K. Sarath Chandran, Dr. V.V.S.N. Rao and Dr., P.S. Dhanraj have obtained Ph.D. degrees.
5. Dr. A.S. Reddy, Dr. R.K. Saxena, dr. K. Sarath Chandran n myself were deputed by govt, of india to Sherubtse college, Kangulng, Bhutan.
6. Dr. A.S. Reddy has become principal of S.V. college.

Prof. Rup Lal



I joined Sri Venkateswara College, on July 23, 1979 as a lecturer in the Department of Zoology. It was my first encounter with brilliant Departmental colleagues and UG students of the college . I found students excettionally brilliant and very enthusiastic. At the same time my colleagues in the Department and in the college were very supportive and encouraged me to encounter the initial difficulties I faced in teaching. The then Principal of the college Dr. V Krishnamoorthy was very dynamic administrator who not only contributed a great deal to the upliftment of the college and to make it one of the best colleges in the University but promoted both teaching and research in the college at a time when doing research in the colleges of the University of Delhi was not very common.

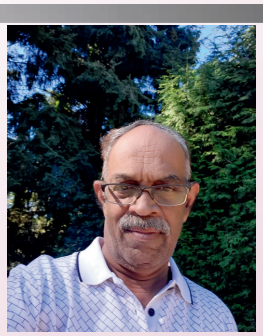
With the support of the Principal and my colleagues in the Department of Zoology we could establish a small researchlaboratory in the college. I was fortunate to get very hardworking and bright Ph.D students particularly Dr. VVSN Rao and Dr. PS Dhanaraj to support my research during initial years. Both of them helped me to establish the researchlaboratory. Eventually they completed their research and got Ph.D degrees while working in the college. Later both of them joined the Department of Zoology as lecturers and retired from the college after serving for many years.

Our research in the college paid and we started getting extramural funding to support our research projects. Eventually I was recognized as a Ph.D guide to supervise doctoral students from the college itself.

While continued teaching UG students in the college, we published several research papers and review articles including three books within a span of nearly 7-8 years. With this background I applied for a prestigious fellowship- Alexander von Humboldt Fellowship in the year 1986. My application was through and I was awarded Alexander von Humboldt Fellowship in 1988 to work at the University of Bielefeld, Germany. Our principal Dr .V Krishnamoorthy was very pleased to know that I had been awarded the prestigious fellowship and granted me sabbatical leave for a period of nearly two years. Both Dr.VVSN Rao and Dr.PS Dhanaraj continued looking after the research activities in the laboratory in my absence.

I returned from Germany in 1990 after availing the fellowship and joined the college. However, soon after my return I was appointed as a reader in the Department of Zoology, University of Delhi from where I superannuated as a professor in September 2018.

When I look back I realise that Sri Venkateswara College as a whole, my colleagues in the Department of Zoology in theCollege and the Principal of the College Dr. V Krishnamoorthynot only provided me with a solid academic foundation but also nurtured my personal growth and future academic development. Therefore I would like to express my gratitude towards our then principal, faculty and the students for the unwavering support, guidance, and encouragement they had provided me during my stay in the college from 1979-1992. Their support, enthusiasm and passion for education not only transformed my academic journey but also greatly contributed to transform Sri Venkateswara College into the thriving community that it is today. For all this I will be forever grateful.



Dr P S Dhanaraj

It was an incredible journey I've had at Sri Venkateswara college. I have had the privilege of witnessing the growth and development of countless students, each leaving an indelible mark on my life. The camaraderie and sense of community among the faculty, staff, and students have made me to feel the college nothing less than a second home to me.

From the countless lectures delivered to the insightful discussions in the classroom, every moment spent at the Venkateswara college has been enriching and rewarding. I came to Delhi wanting to become a teacher in a college. I am grateful for the opportunity given by the college to realise my dream to impart knowledge, inspire curiosity, and foster a love for learning among my students.

I found the Students of the Venkateswara collegeresponsible, reliable and respectful.Bonding with the students of the college became natural for me and there were many instances, I have to convince the administration of the college and once the South Campus administration that students were on the right side and need a favourable consideration.

I feel lucky for the support and camaraderie I have received throughout my journey.

My senior colleagues, to name a few, DR KDP Rao, Dr Sarath Chandran, DR KV Giri, Dr VVS Narayana Rao and Prof Rup Lal were the faculty in the department When I joined the college; they were highly supportive and made my stay comfortable and I could learn the art of teaching from them.

My colleagues who joined later in the department were energetic, committed, friendly and knowledgeable; they made the department vibrant and lively. They made the other departmental colleagues to wonder why the zoology faculty was bustling and exuberant all the time.

Annual day functions of the Zoology department, Teacher's day celebrations and the College festival, "NEXUS" were mind blowing with the creative contribution of students and the staff.

The educational trips across the length and breadth of the country with the colleagues and students were memorable. Every trip ushered into new experiences and remains ever green in the mind.

Though, my time as a lecturer may have come to an end, the memories and friendships forged at Sri Venkatewara College will remain etched in my heart forever. I carry with me the invaluable lessons and experiences gained during my time at SVC.

Ms. Ramaa Sinha



Inception of zoology in 1974. The golden years that have gone by indeed. And that half a century seems extremely long for young people. But for us, it is just like as if time has flown away like the blink of an eye. And indeed, it is a theory of relativity for people my age. Seems that the age of 50 years doesn't seem very long. Just seems like yesterday that some of us joined who were of my age or even older. So let me tell you what times were like back then. I retired in 2018 and it's been five years. And I retired when the college had gone through 45 years of zoology. Of that, 41 years and a month were something that I was associated with. And it has grown into me. And I had grown into it, so to say.

What were the times like back then? Certainly, it fills one with nostalgia when you think back to those times that have gone by. And we have seen a series of changes that have gone on both in terms of the syllabus as well as the timings, as well as the people who have come and gone. It's been a very dynamic kind of department where things have always been on the move. I would say that we, as a group, would always move together as teachers. And we were always coherent, and we had a wonderful association. And I'm sure the legacy is continuing.

When I joined in 1977, August, and before me, there were other people who had been there for a very short time of whom I know only a couple of them whom I've met. But they left an indelible mark on the department even though they were there for a very short spell. There was Dr. R. C. Saxena, there was Dr. Shivaji. There was Dr. Vishwanath. And there was Dr. E. O. Vijayan. I have met Dr. Shivaji and I have met Dr. Vijayan in some other contexts and seminars. I met Dr. Shivaji; he had gone to the Central University in Hyderabad. And he had also then subsequently done his postdoctoral in the Indian Institute of Science, Bangalore. Dr. RC Saxena went abroad. And Dr. E.O. Vijayan went to do further research in Kerala probably. Dr. Vishwanath happened to join Macmillan publication. So he had left zoology and his wife had also left a mark, leaving behind some paintings on eggshells. She painted the chick embryo development on eggshells, but I don't think it exists anymore in the museum. The museum has gone through a lot of changes.

So what was zoology back then? Zoology happened to be, well, zoology, the study of animals. We had an enormous number of specimens to study, and it was extremely interesting to understand the variations, the adaptations, and how little creatures can be so smart and make you feel that you, as a human being, aren't half of what they are. And those creatures that are not endowed with the kind of brain that the so-called humans seem to have behave in a more sane manner. So these are all revelations and discoveries that we understand by studying a whole lot of specimens. And the whole lot. Can you imagine? We had 169 specimens to study in the first year, all the phyla put together, and a few more, the minor phyla, and we had 173 specimens in the second year studying chordata. So invertebrata 169 and chordata 173. I had extreme fun teaching all about them during my early tenure. And I was very saddened by the fact that over a period of time, the syllabus curtailed many of these to make way for other kinds of disciplines, the more modern disciplines, so to say. And of course they are important. Things do change. But all the same, classical zoology study is something very important. And believe me, it was fun doing osteology, the study of bones, to understand how things really work as far as the internal architecture goes to support your external form. And then there's this field of zoo geography that used to be there that has been totally thrown for want of space to teach other modern fields. But that's one very interesting field. It's all about how animals are distributed all over the world and how there are very endemic forms that are so particular as far as their choice of habitat is concerned. And they are very much only in a very small area, and they can't be introduced anywhere else, and they happen to be, and they need to be protected. And we all know there's a lot of cry and hue about climate change and the devastation that is going on, both man-made, well, very much more man-made than what nature is. And you know that there's been a terrible change as far as weather conditions are concerned, and we are having unseasonal rains. As you're all experiencing now, within your very short lifespan that you have walked this earth, you are seeing changes that are there. But what about the changes that have happened in the department? Zoology has undergone changes in the syllabi, but there have been changes as far as the laboratories are concerned, the lecture theaters are concerned, the building has undergone changes. We just had four lecture theaters that were shared by botany, zoology, and chemistry, and we had the annual mode of teaching. And teaching was just fantastic, in-depth, and we had ample time to conduct examinations in a very, very methodical manner without being stressed

Neither the students nor the teachers were stressed, I would say. Yes, certainly there was this thing about tension, about doing the best, but stress was not one of the things. Our general lab was a huge, long hall corresponding to the chemistry lab downstairs. And the general lab happened to be accommodating only one general class at a time. So either the botany or the zoology that used to share the lab for the general classes, which now is called as a B.Sc. program. Back in those times, they used to be called as a B.Sc. general course. So either the botany or the zoology had to wait until the other finished. So it was extremely difficult for us, as far know, pleasing everybody as far as the timings went. And the waiting period was a waste. So we happened to have the lab divided and then life became better. So we had one half to zoology and the other half to botany, so simultaneously two classes could be held. Back in those days, also to huge number of students that were there in the B.Sc. general class. So the theory classes also used to be divided into two sections, first a general one and two secondary general one and two. Third year general also was probably not the theory. I think by then there were a lot of dropouts, and so the theory became just one batch. So we used to have only four lecture theaters, and well, we happened to manage in those, and we had ample time to conduct a full rest rehearsal of the practical examinations, with viva going on for 20 minutes. And what was it like then? It was highly demanding by way of the time and inputs and the exercises that were conducted, and we had dissections to enjoy the most. I think it is so important for us all to understand, as zoologists, what exactly is the anatomy. By a hands-on experience, you dissect an animal and you realize how beautifully organized the internal systems are, even in a small creature. Perfect architecture, as far as nature went. And while you understand that there is a variation, there is also a unity as far as the functionality is concerned, and that is what you compare, in contrast. So we had dissections for the earthworm, the cockroach, and so many systems that we used to have. And there was this beautiful thing called Aristotle's lantern, which are a set of mouth parts that a sea urchin uses. And when you open it, it's a design, power, excellence. You have to pick the pieces and arrange them in your petri dish with a black paper below. And there were very intricate dissections that were involved with the freshwater muscle unio, where it was a challenge to dissect the nerve without breaking. You break, you lose marks. And we as teachers also, each time we would demonstrate it was indeed a demanding experience. And there also is this apple snail called pila globosa, the snail, where we would do the nervous system. And there's a very thin nerve that runs over the intestine, called the supra intestina. That was one of those nerves that would always be nerve-racking for the person who would dissect. And if you get it, you have conquered something. And apart from that, we had dissection of the salivary apparatus of the cockroach, which is beautiful. When you lay it on a slide, it looks fantastic to see the salivary duct going into that tongue-like structure. And no matter how many times you dissect, that excitement is really something.

There were so many more dissections, so I don't want to actually list out everything, but each one had its own challenges. And one of them, I would say, was the rat dissections, the neck region nerves. And you dissected the nerve, and then you have to actually highlight the nerves with small pieces of black paper. And you got the nerve and you're happy with it, but when you're trying to put a black paper underneath the nerve there, you break it. So these were some of the things that added to the fun element, as well as the challenges. Well, what other dissections? I would say tiny things, like the year ossicles in the rat. The rat dissection, after the dissections were over with the blood vascular system, the venous system, the arterial system, and the nervous system, the heads used to be cut and preserved

So, we had to open the middle ear. We had to open the tympanic bulla, which is the bump-like bone that you can feel behind your ear, and cut through that, and then come to the ear ossicles. The ear ossicles, as you know, are three: the malleus and the incus, the hammer and the anvil, were okay. But to get to the stirrup, which is a stapes, was one of the things. Very daunting. And so, you had to get that stirrup with the foot plate, and it will look so beautiful being floated in a watch glass or a petri dish and watch it under the microscope, and you feel that you have achieved something. And I can go on and on with a list of dissections that were there because we, as zoologists, as teachers, we have been taught many of these things. And the more you do, the more you appreciate the comparisons that are there. You study comparative anatomy, no doubt, but then, unless and until you do it yourself, it isn't half as interesting. So here is yet another dissection that I would tell you about: the flight muscles of the pigeon. Extremely interesting to understand how the various muscles that are there, from the chest region to the shoulder, to the arm and the forearm, and even right up to the tips of the fingers, there are just three in the birds can do wonders as far as the various intricate movements of flight are concerned. And even so, you don't understand why birds fly in different manners. I mean, the different species fly in different ways. Something that you learn makes you open your mind to wanting to know why there are so many variations. And is it not that variations are the raw material for evolution? You are all learning that, but you learn that through understanding form and functions, the structure, and the physiology. Well, I do get extremely emotional when it comes to talking about dissections because we have grown up that way, taught that way. And I would say that my generation of teachers were very lucky because we had that kind of exposure to be able to impart that information to the students, and teaching is one of the most fulfilling, I wouldn't say job, I would say it is an experience, it is life itself. And well, yes, as zoologists, we are talking about life and well. It is students who make us teachers. Teachers may actually talk to students, but without students, we can't be called teachers. So, I wish you all the very best in life and that you contribute immensely to this field and make valuable changes also over time. Let the other 50, 50, very many 50 years go by with exciting changes that may come during your lifetime. I'm sure to see that you will be contributing wonderfully to this field that we call as zoology, the glorious field called zoology that is life itself. Be happy and always be smiling and add on too many things that you do in life besides zoology as well.



Dr Kaveri Chakrabarty

I am extremely glad to know that the Department of Zoology, Sri Venkateswara College is celebrating its Golden Jubilee this year. It is indeed a momentous occasion to celebrate and cherish. Over the years many illustrious alumni of the department have made a mark in various fields.

There are countless fond memories of the wonderful experiences I had teaching as well as learning in the department. I was warmly supported and encouraged by my senior teachers and colleagues. I must mention that the students were very sincere, hardworking, intelligent and it was a joy to teach and interact with them. The vibrant environment in the department enriched the teaching-learning process and provided a holistic view of things. I look back with deep gratitude and great appreciation for everyone who made my journey in the department memorable.

Congratulations on reaching this incredible milestone and my best wishes for future success.

Dr Mansi Verma



14th February, 2011, the day when I stepped in to this college for my interview and caught sight of the temple of Lord Venkateswara, reassuring me that I had arrived at the right place. I have beautiful memories imbibed in me, the memories I have gathered in around 12 years of my service here, and I would like to thank all my seniors and loving juniors for that. I always felt lucky to have mentors like VVSN Rao sir, Giri Sir, Dhanraj Sir and Anita Ma'am who always guided me and showed faith in my abilities.

My teaching journey began here, providing me with abundant exposure to both academic and extracurricular pursuits. I learnt organizing lectures and Zoological Society events under the guidance of Anita Ma'am, while Dhanraj Sir encouraged me to delve into writing projects and coordinating international events. I distinctly recall the moment when I was just trying to escape being a part of magazine committee and then releasing it religiously for 10 years as Convenor.

While sharing practical with VVSN Rao sir, his humors like "guys should now raise their collar as one Y-chromosome is going to decide the gender irrespective of n number of X-chromosomes" made learning a joy. Those early morning competitions with VVSN Rao Sir to open the staff room first (for which I used to reach college by 8 am to win the race!!!) followed by scientific discussions (chai pe charcha) before going for the class added zest to our routine. Sometimes 3 trips in a year either for departmental excursions or project related work, courtesy Giri Sir and Dhanraj Sir and being privileged of being the only young female faculty to go (sometimes at gun point too!!).

Teaching, for me, is a passion, as this gives opportunity to interact with young blood. The Department provided opportunity to pursue research with inquisitive students and the support resulted in training more than 50 students in Bioinformatics related projects, and more than 30 students authoring the publications! But being Co-Convenor for Evolvere and Convenor of Phoenix for more than a decade allowed me to engage deeply with brilliant and creative minds. The quest to make department gain more visibility triggered for organizing National and International events and finally we raised the bars!

Teaming up with my friends Rajendra Sir and Jayaraj to enrich departmental activities was a delightful endeavor. While I envisioned grand celebrations for the department's 50th anniversary, fate has steered me elsewhere. But the show must go on…… I wish all the best to my friends taking responsibility of Evolvere and Phoenix on their shoulders for taking department of Zoology to new heights! As the saying goes, old is gold, and I fervently hope the department continues to shine brightly in the years ahead, a true gem in the academic landscape.

"Students don't care how much you know until they know how much you care."- John C. Maxwell

Lieut. Dr. Kameshwar Sharma Y.V.R



It was in 2010, when I started my career as Assistant Professor at Department of Zoology, Sri Venkateswara College, I felt as if it was my home away from home. I take this honor and privilege to thank then TiC Dr. Anita Verma and then Principal Dr. P. Hemalatha Reddy for giving an opportunity which turned my life. All the senior faculties like Dr. KDP Rao, Late Dr. Sarat Chandra, Dr. R.K Saxena, Dr. Rama Sinha, Dr. K.V. Giri, Late Dr. V.V.S.N. Rao, Dr. P. S. Dhanaraj, Dr. Anita Verma, Prof. Om Prakash, Prof. Vartika Mathur, were the guiding light of the department.

They have been our greatest inspiration and biggest supporter in all these years who have nurtured the department with their utmost dedication and hard work. My Fellow colleagues Dr. Ajaib Singh, Dr. Rajender Phartyal, Dr Mansi Verma and Dr P. Jayaraj have always kept the department very livelyand joyful. It felt great to work in this amazing department with you all. Besides, the bond with the non-teaching staff was also very special and learnt many things holistically. I share my special thanks on this wonderful occasion to my senior Dr. Satish Ganta who was instrumental in many things in this part of journey. I share a lifelong bond of friendship with them.

I feel honored to be a part of this journey and therefore, I congratulate Department of Zoology, Sri Venkateswara College on completing successful 50 years. Cheers to future achievements and past glories!

Best Wishes and Regards, Jai Hind!

Venky-Zoo-Alums

Alumni, like stars in a vast cosmic sea, Spread far and wide, yet connected to thee.
Their footsteps imprinted in the college's soil, Guiding the future with wisdom and toil.

Dr. Ankita Dua



Entering graduation life is a very unexpected journey altogether, away from the rigid school days and unprecedented freedom is a feeling of mixed emotions. Getting admission in Sri Venkateswara College is one of my fondest achievements of my academic life and honestly the experiences of these three years were the turning points of how my career shaped up today. The college was a whiff of fresh air and the pious prayer point at the entrance was my best beginning of the day.

The faculty was more like a family with all teachers like second parents to all students. For me, the best interactions were with Dr. P.S. Dhanraj, Dr. Anita Verma, Dr. Giri, Dr. Rama Sinha, Dr. Rakesh Saxena, Dr. Vartika Mathur and Dr. Om Prakash. Even the non-teaching staff was extremely friendly and helpful (even for sacrificing the animals we were dissecting; I was very scared of it!). So many memories for me, the learning experiences with Rama Ma'am, how intricately we were told to draw every angle of the vertebrate skulls were a beautiful learning experience. Dr. Anita Verma is the kindest soul I know, who took deep interest in all spheres of our lives and always lending an ear for solving any problems. Being a newly diagnosed T1 diabetic, I was having a hard time to cope up with my health and Ma'am lent emotional support to me that time that just helped me emerge stronger. I was also encouraged to work as a President of the Zoological Society, Chiasma and that gave me immense confidence to be more interactive and gave a lot of exposure as well. Finally, what I am today, an Assistant Professor in Delhi University, was a dream I nurtured at my home college. When I finished my graduation, I was a loss to decide how to go ahead in my career and the teachers at college only counselled me to go ahead with my Masters in Zoology. At the time of PhD as well, Dr. Dhanraj was the one who showed me the way to Prof. Rup Lal's lab, which was instrumental in my life. Today also anytime in life if I need anything, I am welcomed with open arms by my faculty at my home college. As I said, it's still my second family! Proud to be an alumnus of Sri Venkateswara College!

Anuvrinda Sharma(2023)





It's been barely 3-4 months but my god it feels like so much more. It was an experience that just left us longing for so much more and in the rush of all practicals and God knows how many diagrams, the days went by in a blink, which has now left us clinging onto all the little things that happened. From losing our brains counting beads, to trying to figure out what bone of which animal we need to spot, to not getting proper UV bands in our electrophoresis, all of it just holds memories that have the capacity to start an emotional bawl session.

Major missing chilli potato roll and oof Nescafe hotspot which completely drained out our wallets. From volunteering for NAAC to the Australian delegation event, the trips to Munnar, to Phoenix, all of it is just so overwhelming and I stand grateful to all the people that helped make whatever little time we had so precious that it brings a sparkle in my heart every time I think about it.

Anushka Puri(2023)



As I reflect on the three years in the Zoology Department, I am compelled to express my heartfelt gratitude for the invaluable experiences and memories that have shaped this period of my life.

Coming from a small town to pursue studies here was a significant step for me, and I can honestly say that it has been one of the best decisions I've made. The initial fear of being in a new place vanished quickly, thanks to the warmth and kindness I received from the teachers, seniors, and classmates in the Zoology Department. Their open hearts and welcoming spirit made me feel at home from the very beginning. Participating in the activities of the Departmental society - Evolvere provided me with exposure to the outside world and a taste of healthy competition, broadening my perspectives.

I want to express my deep appreciation for the guidance and support provided by the dedicated teachers in the Zoology Department. Your mentorship has been invaluable, and I look forward to carrying the lessons learned here into my future endeavors. The Zoology Department of Sri Venkateshwara College will always hold a special place in my heart. It has been more than an academic institution; it has been a community that nurtured, challenged, and inspired me.

I am honored to be part of this department and congratulate you on the completion of 50 years of the Zoology Department. It's a proud moment for all of us.

Srianshu Kumar panda(2023)



As someone who has always identified as shy and introverted, my journey with the Zoology department has been transformative. The exposure and experiences I gained have truly been instrumental in bringing me out of my comfort zone.

I've always had a passion for photography, and being a part of Phoenix, our departmental society, has been a game-changer. It provided me with numerous opportunities to hone my skills and connect with like-minded individuals. One of the highlights was pushing myself out of my comfort zone to design a magazine – a process that taught me invaluable lessons and contributed significantly to my personal and professional growth.

I am grateful for the guidance of our esteemed teachers, who are among the most reputed faculty members in our university. Their support has been instrumental in shaping my academic and creative endeavors. The sense of belonging to this academic family is something I cherish.

As we celebrate the 50 years of our department, I want to extend my heartfelt congratulations. It's an honor to be a part of this legacy, and I look forward to continuing my journey with the guidance of our incredible faculty.

Urja Kalyani(2018)



My three years at Venky were great. A big reason for that was my faculty members. Learning was truly fun bcoz of them. My teachers encouraged questions and discussions. Organizing fests and interacting with our teachers was so much fun. I learned so much during my time at Venky. I remember dreading to get my mediocre diagrams checked for the anatomy and chordata practicals, playing games with our teachers during celebrations, whiling away time in-between classes in the scorching delhi heat and filling up sheet after sheet to submit assignments on time. But most of all I miss those dept trips that were eagerly awaited every year. Also, being part of the pheonix magazine was an amazing and enriching experience for me.
I congratulate the dept for completing 50 years. Wish you all the best. Have a great 50th!

Anushka Saxena(2020)



With the department, I believe I truly had a good solid foundation to what would lead to my future career and life, from strengthening my bases in academia and exploring my scientific interest to personal growth through the magazine, events, trips and so much more. I am truly grateful to all my professors, my peers, juniors and seniors and happy to have found a small family in the department.

Vaibhav, Rishabh, Akshanshi and Nirmegh (2021)



Congratulations to the Department for completing 50 years of being an excellent place for education as well as tomfoolery.
Although Phoenix is much younger than the department, in our (admittedly biased) opinion it has since its inception been an excellent journal, not just in the sense of showcasing scientific achievements and ideas but also, as an innately personal diary of the department, keeping a track of the trips, events and people which make the department what it is. We had a lot of fun helping the ninth edition come to fruition. Bringing out Phoenix has never been an easy task, but to do so in the peak of the pandemic, where we were separated by distance, fears and loss was difficult, with unanswered texts, time-limited gmeets, spotty net, and a lack of physical interaction being the living reality. However, if we had the chance to do it again, we would do it in a heartbeat. It was the thread which bound us then, and continues to bind us together as well as with the department, which has made us what we are and given us a space to breathe during our transition from teenage to Adulthood.

Harshita Rupani(2020)



As we celebrate the Zoology department's 50th milestone, I'm thrilled to extend my love and gratitude in the pages of the upcoming Phoenix edition. Reflecting on my time at the Zoology department fills me with gratitude for the incredible experiences, enduring friendships, and the robust academic foundation that propelled me into a master's and now a PhD journey at UQ.
A heartfelt shoutout to my girl gang, 7 Rings – you've been more than friends; you've been family. Your unwavering support transformed the highs and lows of college life into unforgettable moments.
The department, beyond imparting education, served as a catalyst for research and personal growth, shaping me for the challenges that lay ahead. Being the Creative Head for Phoenix and part of Verbum was a privilege, allowing me to explore my creative side and contribute to the vibrant spirit of Venky. Special thanks to Jayaraj sir for including me in his research project, a pivotal experience in shaping my academic trajectory.

Here's to the incredible batchmates, inspiring teachers, dramatic class trips, gossip sessions at Satya cafes, delightful canine companions, Nexus melodies and dance moves, Evolvere events, late-night study sessions, last-minute file writing, printer adventures, and the discoveries that turned the Zoology department into a second home. May the Zoology spirit continue to thrive.

Palak Chugh(2022)





Sri Venkateswara College played a big role in shaping my dreams, imparting not just academic knowledge but also contributing significantly to my personal growth. Over three years, I served as the class representative and later as the president of the departmental society. These roles not only enhanced my confidence but also improved my management skills.
The fast-paced three years were made memorable by the presence of amazing teachers and classmates. The teachers weren't just focused on academics but also became friends, fostering an environment where we felt comfortable sharing our thoughts. The friendships forged during this time, with my classmates and juniors, continue to be cherished, and I enjoy engaging in conversations with them. One of the most valuable gifts from Venkateswara College is my best friend, who has become an integral part of my life.
It wasn't cherry blossom all those years– there were challenges. But every up and down taught me important life lessons, making me who I am today and bringing me closer to my goals. I'm grateful for the supportive environment and the guidance of mentors. As I move forward, I carry with me the skills and memories from Venkateswara College, helping me pursue my dreams.

Fg Offr Amit Bhatt(2021)



At the outset, I feel extremely privileged to be an alumni of Sri Venkateswara College. On the occasion of the 50th anniversary of Department of Zoology, I express my deep appreciation for the fondest memories, lifelong friends and wonderful mentors I got from the department. My experiences at Venky were pivotal in laying a firm foundation which was instrumental in shaping my career.
If given a chance, I would love to revisit the college trips, Nexus, eating masala dosa in the canteen, those long discussion in the front lawn with my friends. To this day, whenever I pass by Venky it puts a big smile on my face and it brings back all those memories.

My only message for the current students is, keep exploring, embrace every opportunity, make as many connections and never fear making mistakes. Whatever Venky and the department has to offer, serves you way beyond your graduation.

Madhav Gupta(2023)





Heartiest congratulations on this remarkable 50th-anniversary celebration! It is with immense pride and gratitude that I join in commemorating this significant milestone.
The department proved to be incredibly fortunate for me, as I had the privilege of earning the KVPY Fellowship right from my first semester. This early success was not just a personal achievement but a testament to the department's unwavering commitment to academic excellence.
The dedicated faculty and vibrant academic environment of the Zoology Department provided me with the foundation to excel and pursue my passion. This department's influence has been a guiding force as I now find myself pursuing an Integrated Ph.D. at the esteemed Indian Institute of Science, Bangalore.
I extend my sincere congratulations to the entire department for fostering an environment that nurtures talent, curiosity, and a love for the biological sciences. May the Zoology Department continue to shine and inspire generations of students in the years to come.
Wishing you a jubilant celebration and many more years of success.

Nirmegh Basu (2021)





It is a matter of immense pride that our beloved Department has entered its Golden Jubilee Year!
A flood of memories from some of the best days of my life come rushing in. It is here that I not only made lifelong friends but also got the most loving mentors. Transitioning from the cocoon of a small town to the hustle of Delhi, the Department made sure I never missed home. From guiding seniors to the parent-like teachers, everyone was monumental in shaping me. These super cool professors weren't just about academics; you could chat about everything under the sun with them – from the best eateries in Delhi to the weighty matters of life. A simple text to those teachers, even today, yields an instantaneous reply, a bond that is hard to replicate. I still miss the lecture rooms, a sanctuary of not-so-funny jokes, exciting hands-on classes, and those drowsy afternoon lectures have become fragments of a bygone era, each holding a charm that time cannot erase. Only now do I realize that each class was a lesson in life, proving invaluable as we ventured into the uncharted territories beyond the college gates.

The teachers always pushed us to explore beyond academics, honing our extracurricular limits and moulding us into holistic beings rather than mere rote learners. Embarking on countless birding trips with seniors, and those sleepless nights dedicated to Phoenix – it felt like our grades depended on it. Good times! Although cut short by the pandemic, the department never failed to surprise us, from quickly acclimatizing to online platforms, coming up with captivating assignments, to compromised home experiments. Who would have thought that biotech could be explored with a humble potato and a few over-the-counter pills?

To the current and future batches: cherish these moments. These are the golden days, and once you're out there in the real world, you'll miss the chaos, the camaraderie, and sometimes even the questionable AQI of Delhi. The Department of Zoology didn't just teach us about animals; it turned us from carefree teenagers into responsible adults.

Here's to the unwritten stories, the untold jokes, and the countless memories that make our department a home. I am positive that the Department will scale unprecedented heights with its new generation of trailblazers. A big thank you to the Department from the bottom of my heart.

Ranjanee Aron(2023)



The first time I experienced anything with the zoology department upon opening of the college after COVID. It was really funny because I remember not wanting to be a part of Evolvere when I first joined the college. But slowly after this day, seeing how lovely everyone was and how good it felt to be a part of a community, that too, my department, the society spirit started growing on me to say the least. There has been so much growth within me all because of this society.

The last practical ever from our bachelors. This day was so emotionally hilarious because I remember we waited for hours for our Gel Electrophoresis experiment to work and when we finally turned the light on, it didn't work and we all laughed from tiredness and sadness. Following this, Rajendra sir suddenly came and said "Smileeeee" and took a group photo of our last ever practical in the Zoology Hons. Lab. This image reflects all the times we cried about not having completed files, or missing out on printed images, binding and then the ultimate happiness of having a perfectly completed practical file.

This was probably the most emotional day for me in college. The fact that I had to leave this behind was hitting me hard. The kind of friends I made here, the people I met, the experiences I had with this department, and how that changed me into a whole other person is priceless. I can't forget the fun dance duet between Namita Ma'am and Richa Ma'am, the hero performance of Jayaraj sir, and Rajendra sir's whistle notes leaving Beyonce to question her skills haha.

During our preparation for the farewell to our seniors, our batch bonded the most. I remember how fun we had in preparing for the event. How all of us came one to enjoy the day. I think all of us had planned to have the best day for ourselves rather than our seniors haha because we had just finished with our practicals and were in a total party mood. This is one of my most cherished memories from our department. The way all the teachers and students danced, the emotional atmosphere of the day due to our seniors leaving, it was definitely one of the most wholesome moments.



Sultanpur Bird Sanctuary is one of the most popular things in our college. I think every batch of every course has been there with none other than Robin sir. This memory is quite fun as I remember this was during our last year and all of us were tense with upcoming entrances, possible admissions, etc. so this outing provided a good break with all of that. I think it was the first time in a while where everyone enjoyed themselves and weren't as stressed about the future.
The zoology department really made my college experience complete. I'm forever grateful for all the time I've spent, all the things I've learnt and all the people I met.

Shalini Raman(2023)







I feel so overwhelmed as I dare and revisit the memories that have helped me become a better person, I am today. Being a part of the prestigious Department of Zoology, SVC was an achievement in itself, little did I know, this would become the most enthralling and memorable journey of my life. Since it started off through a computer screen, I had mixed feelings about my most awaited college life, however, with the pandemic gradually fading away, we were allowed to walk past the gate of SVC and as bright as that day of 17th Feb 2022 was, i remember that my heart skipped a beat! Fourteen months of my college life brings me a vivid flashback of ups and downs, friendships, betrayals, fests, music, canteen, amazing teachers, rock garden and the poetry in the air of SVC recited by the chirpy birds. With Room no. 256 of our department being an emotion, I also felt deeply connected to the labs which were strangely a comfort place to listen (not) to the lectures. The events have always been an astonishing revelation of the quirky side of our teachers which was always an amusement. I thank "Phoenix", the departmental magazine for helping me establish myself in the department as a decent editor and exploring a more meaningful definition of myself. I'm grateful to all the teachers, fellow mates and the connections that this department has helped me make by bestowing upon so much love.

ECHOES OF PAST EVENTS

The seminars echo with the whispers of the past, A tapestry of moments, forever to last.

1999
Silver Jubilee Event
Lecture by Dr. K.K. Agarwal, Director, Heart Care Foundation of India



2003
Independent Zoological Society "Chaisma"
Lectures by: Dr. Rup Lal Head of the Department of Zoology, on Biotechnology
Dr. G.D. Gupta, Head of Biological Division, CBI on Role of Biological Exhibits in Forensic Science and
Dr. R.K. Bhatnagar, ICGEB on Challenges to Biotechnology.



2004-2005
lectures by various INSA (Indian National Science Academy) scientists: Dr.ShahidJamil; Dr.Anurag Sharma, IIT; Dr. J.P. Khurana; Dr.Salunke, NII.
Dr. S.K. Sarin ,GB Pant hospital on Hepatitis.



2005-2006
Lectures by: Dr. B.C. Das, the director of Institute of Cytology and Preventive Oncology (ICMR) on Cancer
Dr. Michael A. Cremo on human devolution

2007-2008
lectures by : Dr. M.M. Chaturvedi, Department of Zoology, Delhi University on Dancing DNA and
Dr. Debrata Ghosh, AIIMS on Promises of Stem Cell Research



2011-2012
"Chiasma" retitled as "Evolvere" 1stSarath Chandran Memorial Lectureby Dr. Randeep Guleria, AIIMS who is a Padmashree awardee (2015) and Dr. Rup Lal, Delhi University.









2012-2013

2nd Sarath Chandran Memorial Lecture by Dr. Shikha Sharma, the renowned nutritionist workshop by the American Society for Microbiology (ASM)

2013-2014

3rd Sarath Chandran Memorial Lecture by Dr. Rama Jayasunder, AIIMS on the topic "Systems Biology Approach of Ayurveda"

2014-2015

4th Sarath Chandran Memorial Lecture by Dr.Sathyabhama Das Biju, from the Department of Environmental Studies, University of Delhi on "Halting human induced amphibian extinction" and Dr. P. Heera, Max Hospital who helped the students understand the various aspects on Polycystic Ovarian Disease

7 th March, 2017

Lecture on 'Novel insights into neuro AIDS'. By Dr. Pankaj Seth, Scientist & Professor, NBRC, Manesar.

15 thFebruary, 2018

Lecture: How to make a Drug
Speaker: Dr. Jasminder Sahi, Senior Director and Head of TMED Asia Pacific, Sanofi, China

13th March, 2018

Lecture and Interactive session on "Survival strategies of Mycobacterium tuberculosis" by Prof. Yogendra Singh, Department of Zoology, University of Delhi Lecture and Interactive session on "Survival strategies of Mycobacterium tuberculosis" by Prof. Yogendra Singh, Department of Zoology, University of Delhi Survival of the fittest, A multi-tiered game that put everyone's survival skills on test

12th october, 2018

Seminar by Rohan Chakravarty on "Cartoons in Conservation Communication"
First Aid Workshop for Animal Lovers by- Dr. R.T. Sharma, President, PAWS India
Health Camp by Max Super speciality Hospital
Face Painting Competition Theme – Wildlife





9th September, 2019

SEMINAR by Dr Jasminder Sahi, Senior Director, Department of translational medicine and exploratory development, Sanofi R&D, China on "Research and development in the pharmaceutical industry".
Dr Sheetal Gantodra, Senior Scientist, CSIR IGIB, New Delhi on "Bugs, Drugs, and the Host" Pharmashop it: E-poster competition
Chill pill: Pharmacy Quiz on 9th September, 2019





1 st March, 2019

SEMINAR by Prof. Seyed E. Hasnain (Noesis event)
The Art of Healing- An Art Therapy Session by- Ms. Spriha Mukherjee



3rd March, 2020

Lecture by Dr. Anand Swaroop (Science Fest'20)
Nazariya- On the spot nature photography



16th February, 2021

Webinar by Dr. Jane Goodall

28th September, 2021

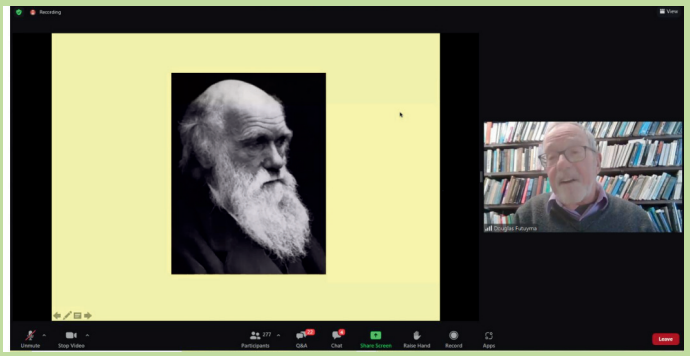
International symposium on Recent Methodologies and Advances in Termite Research





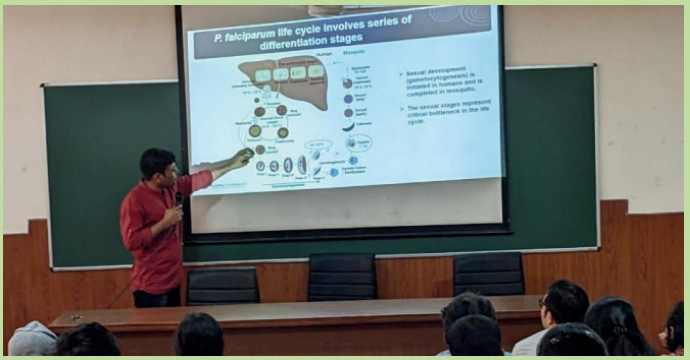
29th October 2021

international webinar on ‘Recent Methodologies towards Using a Consortium of Soil Bacteria to Biodegrade PET Plastic.’
Quiz (2 rounds)
Best out of waste competition (Anewupyog)
Photography competition (Anokha)



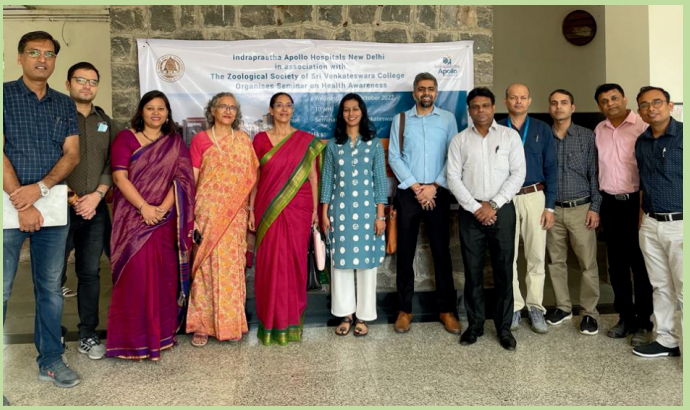
4th March 2022

webinar on ‘Evolution: The most important theory of biology.’ by Dr. Douglas Futuyma, Professor in the Department of Ecology and Evolution, University in Stony Brook, New York United States of America



17th October 2022

"PLASMODIUM FERTILIZATION: A TALE OF TWO GAMETE FUSOGENS by Dr. Sudhir Kumar, college alumni



19th October 2022

Seminar on "POST-COVID WORKPLACE ERGONOMICS AND HEART HEALTH" by Dr. Seema Grover and Dr. Ranjan Modi
Panel Discussion

9 November, 2022

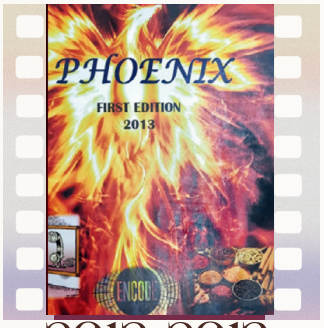
Species diversity and evolutionary history of termitophilous rove beetles by Dr. Taisuke Kanao Faculty of Science, Yamagata University, Japan



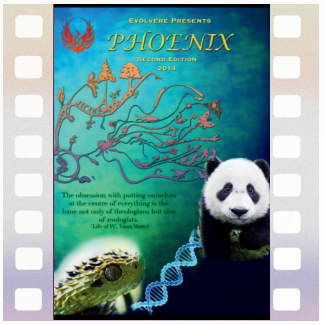
6th April 2023

Seminar ‘Stem Cells and Regenerative Medicine’ given by Prof. P. C. Rath, JNU
EcoReel (Reel making competition)
EcoTile (best out of waste competition)

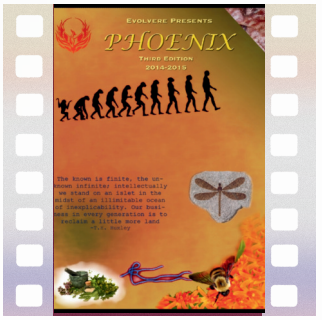
EVOLUTION OF PHOENIX



2012-2013



2013-2014



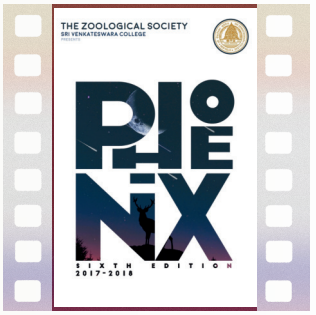
2014-2015



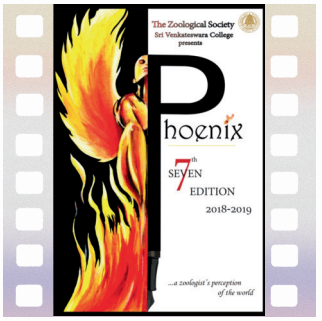
2015-2016



2016-2017



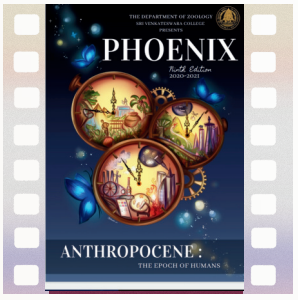
2017-2018



2018-2019



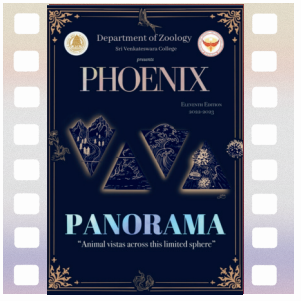
2019-2020



2020-2021



2021-2022



2022-2023

EXCURSIONS ESCAPADES

Through the field trips where nature unveiled,
In the heart of biodiversity, where stories were hailed.



ECA ACHIEVERS



SHIVANGI GUPTA
PRESIDENT (ECO CLUB)
GRO HEAD (AARAMBH NGO)



TILAK RAJ
VICE PRESIDENT(ECO CLUB)
MEMBER (EMPHATISE)



ISHA YADAV
VICE PRESIDENT
(ECO CLUB)



DEBJEET RAY
MUSIC PRODUCER (CRESCENDO)



CHETNA SHARMA
MEMBER(FINE ARTS ASSOCIATION)
EXECUTIVE HEAD(ECO CLUB)



AAYUSHI SINGH
MEMBER (CRESCENDO)



PUNEETA CHHABRA
MEMBER(PETRICHOR)



NISHANKA RAJ
MEMBER (ASCEND, CDF, EMPATHISE)

RANK HOLDERS

BATCH OF 2023



PRABHJOT KAUR
9.41



GAURAV DUTTA
9.32



SRIANSHU KUMAR PANDA
9.29

BATCH OF 2024



CHETNA SHARMA
9.79



JASLEEN KAUR
9.57



MUSKAN ANTHAL
9.04

BATCH OF 2025



ASHUTOSH
8.95



SUJAN
8.77



RISHI RAJ
8.64

RESEARCH @ SVC ZOOLOGY

PUBLICATIONS

Dr. Obaiah Jamakala published a review article, titled "Receptor mediated stimulation of AKT pan-kinase in NIH3T3 cells"

Dr. Perumal Jayraj published a research article, titled "Establishment of patient-derived xenografts of retinoblastoma and choroidal melanoma on the avian chorioallantoic membrane."

Dr. Sukrat Sinha published a research article, titled "In silico phytochemical repurposing of natural molecules as entry inhibitors against RBD of the spike protein of SARS-CoV-2 using molecular docking studies,"

Dr. Perumal Jayraj published a research article, titled "Establishment of patient-derived xenografts of retinoblastoma and choroidal melanoma on the avian chorioallantoic membrane."

Dr. Vartika Mathur published two research article, titled "Therapeutic compounds from medicinal plant endophytes: Molecular and metabolic adaptations" and "Isolation and characterization of phenanthrene-degrading bacteria from urban soil"

Dr. Anita Verma published a research article, titled "Alterations in the gut enzymes of Helicoverpa armigera (Hübner) induced by dietary Artemisia annua L. essential oil"

Dr. Anita Verma and **Dr. Rajendra Phartyal** published a article, titled "Comparative docking studies of drugs and phytocompounds for emerging variants of SARS-CoV-2"

SRI-VIPRA

The department of zoology at SVC has always been in involved in quality research. This year under SRI VIPRA (Sri Venkateswara Internship Program for Research in Academics) department faculty has mentored 31 students in 7 projects.

S. NO.	PROJECT TITLE	NAME OF MENTOR	NO. OF STUDENTS
1	Microbial biochemical characterization and bioactivity	Prof. Vartika Mathur	1
2	Food adulteration In fruits and vegetables	Dr. Rajendra Phartyal & Dr. Anita Verma	9
3	Evaluation of eyelid tumors and their metastatic potential using CAM assay	Dr. P. Jayaraj	10
4	Nanoparticle kinetics inside a cell	Dr. Mohita Bhagat	1
5	In silico screening and identification of potential drugs against Protein targets	Dr. Sumit Raj	3
6	Protective role of Curcuma longa extract supplementation in STZ induced diabetic rats	Dr. Obaiah Jamakala	4
7	Production of Chelated minerals Selenium and Zinc through Coriandrum sativum and Mentha	Dr. C. Sreenivasa Reddy	3

Phoenix 11th Edition



On 6th April 2023, Phoenix, the Magazine Society, Department of Zoology from Sri Venkateswara College (D.U) had released the 11th edition of the magazine. Prof. P.C. Rath (School of Life Science Jawaharlal Nehru University Delhi, New Delhi.) was invited on the occasion of magazine release. Dr. Rajendra Phartyal (Coordinator, magazine society) introduced the society to our esteemed guest, Prof. P.C. Rath and audience and enlightened everyone with the journey of Phoenix and how it started and the motive behind it.

Prof. P.C. Rath also delivered his talk on ‘Stem Cells and Regenerative Medicine’ , which was fascinating for the audience and they loved it and a small round of question & answer occurred with the speaker. Phoenix had also organized two intercollege competition named ‘ecoreel: reel making competition ’ and ‘ecotile: best out of waste’.

On the day event the results were announced by the esteemed judges.





Teacher's Day









The students of the Department of Zoology orchestrated a truly delightful and heartwarming event dedicated to celebrating the exceptional faculty members of their department. This event was a vibrant and thrilling occasion, filled to the brim with joy and jubilation. It infused the entire zoology community with an infectious sense of euphoria as they came together to honor their esteemed teachers.

The stage came alive with spectacular performances and engaging activities specially designed to delight the beloved educators. The atmosphere was filled with music that transcended boundaries, setting the perfect backdrop for some playful mimicry acts that added an extra layer of fun to the festivities.

Mark Van Doren's wise words, "The art of teaching is the art of assisting discovery," resonate deeply with the ethos of our department. Our teachers are not only dedicated educators but also avid researchers in various scientific fields. Their open hearts and willingness to guide students allow them to harness their collective knowledge and creativity to innovate and explore new frontiers.

FAREWELL 2K23








Saying goodbye to our beloved and ever-supportive seniors is always a poignant moment meant to be celebrated with joy. The Farewell 2023 event, organized by the Department of Zoology, was a delightful and enthusiastic occasion. The final-year girls looked stunning in their elegant sarees, while the boys adhered to the dress code with their chic ethnic attire. The event featured a series of exciting activities and energetic performances, making it a memorable day. Faculty members from our department served as judges for the titles of Mr. Farewell and Ms. Farewell. Following the festivities, teachers honored the students with graduation hats and mementos, capturing the precious moments on camera for lasting memories. The Department of Zoology has a reputation for nurturing brilliant minds in various fields of science, and it's evident that our seniors have embarked on successful paths. We are grateful to our seniors for their selfless guidance and support, helping us juniors navigate the journey of learning and growth.

Freshers 2023







The Department of Zoology orchestrated a truly delightful affair dedicated to the newest members who joined in 2023. It was an event brimming with excitement and joy, a concoction of pure delight and jubilation that infused the entire zoology family with euphoric energy. The stage was ablaze with phenomenal performances and engaging activities tailored for our newest additions. The atmosphere resonated with the rhythm of music, transcending all boundaries as mischievous games added an extra layer of fun to the proceedings. Themed as "Barbenheimer," the freshers were challenged to dress according to the theme, adding a splash of creativity to the celebrations. As the event progressed, the entire zoology department came together in harmony, dancing to the tunes of shared joy and camaraderie. The event served as a perfect icebreaker, fostering bonds between seniors and juniors that will undoubtedly flourish throughout their academic journey together. In essence, it was an evening filled with laughter, dance, and newfound connections, setting the stage for a memorable and fulfilling journey ahead.





ZOOFIESTA









The year 2023 marked a significant milestone for the Department of Zoology at Sri Venkateswara College, Delhi University, as it completed five decades since its establishment. To commemorate this occasion, the department organized an intercollege festival named "ZOOFIESTA." The festival included various events such as a free health checkup camp, competitions, and an enlightening seminar, with the primary aim of raising awareness about urban health.

The free health checkup camp, conducted in collaboration with Primus Hospital, offered six tests: BMI (Body Mass Index), BP (Blood Pressure), Blood Sugar, BMD (Bone Mineral Density), PFT (Pulmonary Function Test), and ECG (Electrocardiogram), along with consultations with physicians and gynecologists.

Additionally, a seminar titled ‘Artificial Intelligence Driven Early Warning Systems for Clinical and Public Health’ was delivered by Dr. Tavpritesh Sethi from the Indraprastha Institute of Information Technology, Delhi.

A special 50-year souvenir commemorating the department's establishment and development was released, showcasing its achievements over the past five decades. This souvenir serves as a testament to the dedication of the faculty, staff, and students, highlighting the collective successes achieved over the years.

In addition to the seminar, two engaging activities, Zoocadabra and Zooista, were organized. Zooista aimed to showcase participants' creativity on various zoological topics through Instagram Reels, while Zoocadabra involved a CD Painting Competition, adding to the celebratory spirit of the event.

CREATIVE CORNER



DIVYA (FZH)



DIVYA (FZH)



ISHA (TZH)



PUNEETA CHABHRA (FZH)



ANUSHKA DHIMAN (TZH)



PUNEETA CHABHRA (FZH)



ANUSHKA DHIMAN (TZH)



SHWETA PAGARIYA (TZH)



RHYTHM (FZH)

Poems

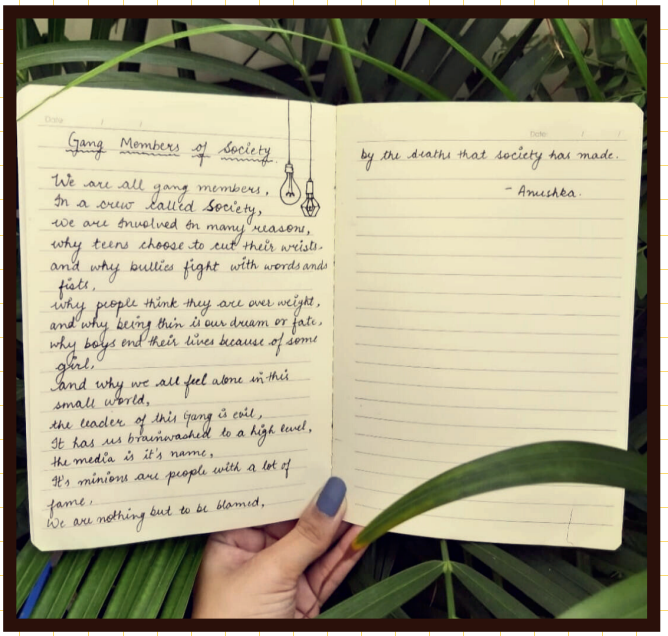
October

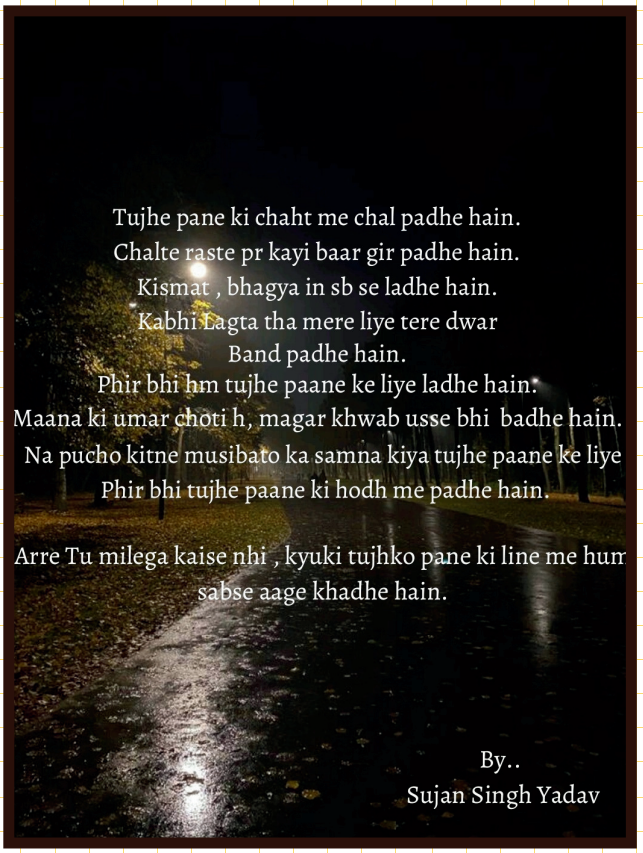
I am slightly brown,
With a little frown.
Cause as I commence,
Flowers loose their essence.

I mark the end of spring,
And hugs the winter giving it a ring.
I am the fall,
As they all call.
But I am pretty in my own way,
I am all about breeze and hay.

I am ethereal,
I am surreal.
I am an attractive her,
Yes I am October.

-Puneeta Chhabhra





शीर्षक:- वो यादगार बचपन
मैं गौर फरमाऊ एक पल के लिए इस विषय पर
तो जानूंगा कि हमारा ज़माना तो यही है जो अभी है
पर खूबसूरत हिस्सा इस जमाने का अब बीत चुका है
जिस हिस्से का हिस्सा तुम मैं और हम सभी हैं
ये बात करूंगा मैं अपने तुम्हारे और हम सबके बचपन की
ले चलूं तुम्हे उन बेखौफ बेबाक पलों में जो बीते बचपन में
वो ज़माना था हमारा ही पर बेहद हसीन था
रंगो और खुशियों से हर पल जिसका रंगीन था
मानो जैसे पास हमारे बेबाकी का उड़ता कालीन था
जिसको उड़ाने और उसमे खो जाने को वक्त ही वक्त पास था
शायद नही हो हमें उस समय की कद्र हम मासूम थे
पर अब याद जब करते तब लगता है वो गलियों में दौड़ते रहना ही कितना खास था
क्रिकेटर बनने का पहला सपना जो सब लड़को ने देखा होगा
और लड़कियों ने भी खेल कूद में हया और सामाजिक बंधनों को न देखा होगा
ये सब कुछ न जाने क्यों कब और किसने छीना हमसे ये वक्त हमने नही मांगा कभी
क्यूंकि बंधनों में बंधकर रहने से तो बेबाकी में जीना ही चाहे सभी
क्यों फिर से मैं दौड़ भाग पर धप्पा नही कर सकता
तुम छुप जाओ ना एक दफा फिर से मैं ढूंढने जाता हूं
मैं तुम्हे और उन खोए पलों को चलो ढूंढने आता हूं
जो ज़माना बचपन का था वो इस जवानी में नहीं है
रहना है फिर से उसी दुनिया में जहां कोई न टोके बेटा ये गलत और ये सही है

- खुश शर्मा

PHOTOGRAPHY



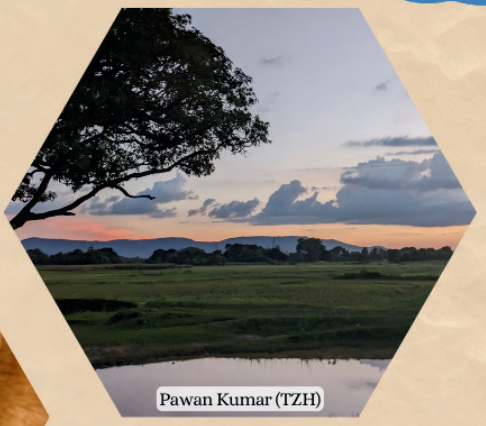




Pawan Kumar (TZH)



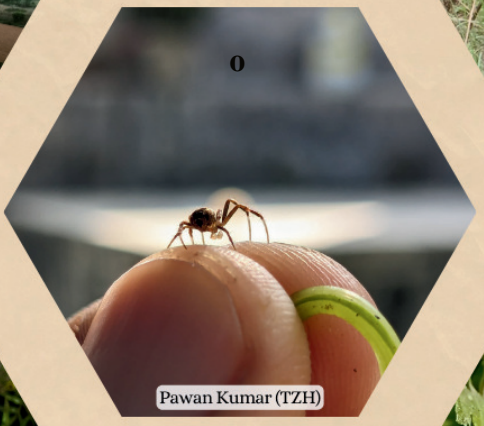
Pawan Kumar (TZH)



Pawan Kumar (TZH)



Tilak Raj (TZH)



Pawan Kumar (TZH)



Tilak Raj (TZH)



Anubha Rawat (SZH)



Pawan Kumar (TZH)



Anubha Rawat (SZH)



















ZOO FIELD TRIPS













TEACHERS



NON TEACHING STAFF



THIRD YEAR



SECOND YEAR



FIRST YEAR

Memories

since 1973






































HAPPY




















vivo X70 Pro · ZEISS






TDS

































A golden jubilee, oh how time has flown,

In the Department of Zoology, a legacy sown.

and we continue to build more...

BOOKMARKS

TEAR N USE









खूबसूरत अर्द्धशतक खुशियों का

क्या खूब है न ये आंकड़ा पचास का
ये खुशियों का अर्द्धशतक है,
स्थापन से लेकर के आज तक के
ये उपलब्धि और गौरव के पांच दशक हैं।
सन 1973 ई का ये सिलसिला चला और वेंकटेश्वर के इतिहास के पन्नों को सुनहरा करता गया
सक्सेना और विजयन सर के विश्वास और निश्चय से उड़ान भरता गया ,
एक दृष्टि थी इन शिल्पकारों की जिन ने मूरत पर रखी दृष्टि उसको तराशने में और मूरत का आकार बनता चला गया
शुरुआत हुई कुछ बच्चों और शिक्षकों के सहयोग की नींव पर मूरत का निखार बढ़ता गया।
ये मजबूत नींव को लेकर और विश्वास हौसले अपने अनुजों को देकर आगे बढ़ाना था ये कारवां
तब से लेकर ही आज तक है ये खूबसूरत सा सफर आज भी उसी दिन जितना जवां
अरसे से अब तक ये मेधावी छात्रों को खूबसूरती से तराशने का सागर है
इस सूरज की किरण गिरने से हुआ भविष्य कितनो का उजागर है
है यही तमन्ना मेरी और हम सब की
कि सहयोग और खुशियों का सिलसिला न रुके कभी
जूलोजी की पताका है ये लहरती हुई न झुके कभी

-खुश शर्मा



IN THE LAND OF SUNRISING
THERE LIES A WAY OF LIVING
KAIZEN IS WHAT IT IS CALLED
A ART OF CONTINOUS GROWTH
EACH DAY TAKING A STEP TOWARDS IMPROVEMENT
EVEN IF IT IS JUST BY ONE PERCENT
EVERY MOMENT BRINGS A CHANCE TO GROW
ERASING ALL FEARS AND OVERCOMING THE FLAWS
NOT ABOUT THE PERFECTION OR REACHING ON TOP
BUT THE JOURNEY AND NEVER WANTING TO STOP
EMBRACING KAIZEN THE PATH OF IMPROVEMENT
NEVER SETTLE FOR LESS, WORK HARD FOR
BETTERMENT

