
CAMOUFLAGE

EDITION 2022



*Department of Zoology (NICHE)
Acharya Narendra Dev College (ANDC)
University of Delhi*



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FROM PRINCIPAL'S DESK

Dear students, faculty members and non-teaching staff members,

I am pleased to announce that the Department of Zoology is launching its magazine, which will showcase the incredible research, accomplishments, and initiatives of our talented students and faculty. As the Principal of this college, I am delighted to see such enthusiasm and passion from the Zoology department, and I look forward to reading the magazine.



The magazine will be a platform for students to showcase their research findings, essays, creative works and updates on the latest developments in the field of Zoology. I believe that this magazine will serve as an excellent resource for students, faculty members, and anyone interested in the fascinating world of Zoology.

I would like to take this opportunity to congratulate the Zoology department for their hard work and dedication in putting together this magazine. I would also like to encourage all students to submit their contributions to the college magazine and make it a huge success.

I am excited to see what the Zoology department has in store for us, and I wish them all the best for their upcoming endeavors.

Prof. Ravi Toteja
Officiating Principal
Acharya Narendra Dev College

TIC'S WORDS

It is with profound pleasure, humility and anticipation that I congratulate my editorial team on release of second issue of Zoology Department Magazine, Camouflage. I was happy to see how each and every member was receptive enough to incorporate new ideas and meet the deadlines to make this magazine more readable. The enthusiastic write ups of our young writers are indubitably sufficient to hold the interest and admiration of the readers.



This issue is indeed a pious attempt to make our budding talents give shape to their creativity and learn the art of being aware because I believe that the success depends upon our power to perceive, the power to observe and the power to explore. We are sure that the positive attitude, hard work, sustained efforts and innovative ideas exhibited by our young buddies will surely stir the mind of the readers and take them to the surreal world of unalloyed joy and pleasure. It gives me immense pleasure to ensure that this magazine has successfully accomplished its objective. The reflection of the students' creativity and achievements is the epitome of the magazine. Students have put forth their ideas and thoughts that are too deep to be expressed and too strong to be suppressed. This magazine is before you due to the combined efforts of the editorial board, I take the opportunity to thank all the contributors as their contribution is the reason that makes this magazine endearing with our readers. I congratulate all the students whose articles are published in this issue of Camouflage.

Prof. Seema Makhija
TIC
Department of Zoology
Acharya Narendra Dev College

CONVENOR'S WORDS

Kudos to the new generation of Zoologists who have shown the light to the next budding undergraduate researchers.

It is a nostalgic moment for me since the "Highlights" was published. It was the first attempt to showcase our Talent with "Best Teacher Awards" by our Faculty who are now Professors...Prof. Sarita Kumar and Prof. Seema Makhija.... and it was a proud moment for the Department then and I was the proud TIC.



We have indeed crossed many more such moments and this is due to our students who work tirelessly to make all of us proud to be ANDC Faculty.

"The Cherry on the cake" is the contribution of final year students in writing Research papers !!

With this I hope that every student of ours reach great heights in their future. All the very best .

Dr. Monica Misra
Convenor
NICHE

Editors Speak



Anshika Sharma

(II year)

Coordinator & Chief Editor

From the very beginning writing always fascinated me, it is something which I can never say no to. And CAMOUFLAGE gave me the chance not to just stop as a writer but an editor, better to be the coordinator of a well established department's annual magazine. What else I could demand for?

Though I'm an ambivert but this magazine gave me a better reason to interact with new people and working with them. While dedicating myself to the magazine, I got the opportunity to enhance my skills both for the personal and professional life. Apart from this, it gave me a reason to be proud on myself, smile wide with a sense of satisfaction and a full college vibe to plan things by your own and make them happen. Restoring pre-covid activities is not really easy but our small steps are leading us to achieve the same as previous with enhanced enthusiasm, this magazine is a process and outcome of the same.

I thank my teachers for having faith on me and handing over this responsibility to me. I thank my colleagues, magazine editors and designers, for listening me patiently and fulfilling my demands everytime, for the same. Without the support and trust of you all, I wouldn't be able to make this magazine a reality by my own.

To the cheerful readers, I hope that you'll enjoy the work and efforts of all – the writers, artists, photographers, faculty and of all those who willingly gave their pieces of talent for you. Looking forward for collaboration with you for the next edition...

Till then enjoy reading, ENJOY CAMOUFLAGE!

CAMOUFLAGE is the medium through which the talents, potential and achievements of the department of Zoology are reflected. I feel honoured to be a part of this team. The experience that I got while working for the departmental magazine is something that I will hold with me forever. I got to learn so many things like teamwork, patience etc. It made me think out of the box to make this magazine a success. I hope that you will enjoy the magazine and appreciate the efforts of everyone involved.



Harshita Kushwaha

(II year)

Chief Designer & Editor



Divya Pant
(II year)
Associate Editor

Being a part of the departmental magazine of Zoology, CAMOUFLAGE I learned so many things like team work, skills, patience etc. Working together, storming our mind for ideas, those discussions, we learned a lot from it. CAMOUFLAGE provided us the stage to show our skills and do something for our department. I feel honoured to be a part of this team. I hope that everyone will really enjoy the magazine .

The journey of making the magazine was such a wonderful experience. It was challenging, meaningful, and deeply fulfilling. I am very happy and pleased to be part of this. It's made me even more active as a volunteer/person and inspired many ideas for future projects and tasks. I had the role of designing the magazine and this role perfectly suited to my skills and interests and it gave me the opportunity to make and design the magazine along with a wonderful group of friends.



Basab Bhattacharjee
(II year)
Associate Designer

IN MY CLASS

Every day, charged with information and loaded with
tools,
As per my lesson plan, I am determined to deliver the
best I can!

As I enter the class, I see the young packets of energy
with sparkles in their eyes,
And an ocean of emotions!!

I see....

Curiosity and expectations, full of anticipation,
Shyness and hesitation, hiding in the corner,
Holding up minds full of questions.

I see,

Struggle and attempt, all prepared with a paper
and pen,
to absorb whatever they can!

Desire for perfection and motivation for being
the best,

There is keenness, sitting in the front,
Eager to know, more than the rest!

I see,

Creativity, wandering out of the class.
A rebellion, in the middle row, not at all ready to
go with the flow!

Somewhere at the back, I see mischief, she needs
a break!

And boredom too, looking lazy, sitting in the class
is not that easy!

But, most of all, what I see in every corner of the hall,
is dream and hope!

The dream of a beautiful life and power to become
whatever they want to be,

And a hope that I will guide them through thee!

I feel responsible coz I must,
Satisfy the curiosity and encourage the shyness,
to let those questions out!
Keep the keenness alive, the inquisitiveness must
not die!

I feel responsible....
To bring back the creativity and set it free,
and calm down the rebel, it is okay to disagree!
To let the mischief play, the boredom should
smile too,
I must keep the hope ignited and the dreams
alive!
The feeling is overwhelming and the responsibility
too high!
With determination stronger than ever, I start....
“Hello students, let us see what we learnt in the last
class!”

Dr. Sushma Bhardwaj
Faculty



ALUMNI SPEAKS

Memories

It was my immense fortune to be a part of Dept. Of Zoology, Acharya Narendra Dev College. The three years spent here were splendid and have helped me to grow better both professionally and personally. The learner centric environment along with guidance and support from our faculty members has shaped me to count myself into a better person. Huge respect, love and devotion for entire faculty members and department. I feel so proud to be associated with this prestigious institution.



Dr. Neha Niharika
Batch: 2004-2007
Assistant Professor Zoology,
Daulat Ram College



Harveen Kaur
Batch: 2015-2018
Pursuing Ph.D. in Environmental
Studies from the University of Delhi

AND College opened a plethora of opportunities throughout the three years of my bachelors degree. Every day was a new experience. It helped me learn more about life along with helping me grow through it. It has shaped my career in more ways than one. Conferences and Science Conclaves helped me interact with people of diverse science backgrounds inculcating a collaborative nature and showing the various trajectories that I could pursue after graduation. Various research oriented fellowships under the Innovation projects, ELITE fellowships, etc. helped me discover my interests in the field of research and hone my problem solving skills. Numerous hands-on workshops like the one on microbial techniques provided a better insight into the hardwork and dedication that goes into conducting a successful experiment. These paved a path of critical thinking and discernment for me. In a nutshell, AND college has been the foundation to the research path that I undertook and here I am pursuing Ph.D. in Environmental Studies from the University of Delhi.

Having a fulfilling college experience involves many different factors, including trust and respect for your professors which make you humble and responsible, asking questions and clearing up any confusion in class helps to get command on your subject, acting on your instincts and learning from your mistakes upgrade your personality and confidence, converse with people outside of your department as well to improve communication skills with expansion of your network and most important factor is practicing self-care and self-reflection which strengthen your character.



Pranjal Sharma

Batch: 2017-2020

**Ph.D. Research Scholar : Marine Biology
Research Center,
Zoological Survey of India
(Madras University)**



Radhika

Batch: 2018-2021

**Pursuing M.Sc Zoology from
Department of Zoology,
University of Delhi**

I was indeed nervous but excited too about entering into one of the top science colleges, Acharya Narendra Dev College of University of Delhi. But this nervousness didn't last longer with me due to the environment I got at the Zoology department of ANDC . I never felt that I was a fresher there and my journey from entering into the department as a fresher to bid adieu to my department was so happening and memorable. It was like a home away from home for me. I don't think I could ever get such supporting , loving and caring faculty. My department (Zoology Department) made me the person I am today . It gave me all the confidence and exposure to pursue my career in the right direction . I am really grateful to all my teachers for helping me in stepping forward towards my dreams. I feel immensely proud to be a part of the zoology department of Acharya Narendra Dev College. I express my heartfelt gratitude to the department for giving me such opportunities to explore myself.

My journey in Acharya Narendra Dev College started in 1999. The college as well as the department of Zoology, at that time, with its modest resources could effectively inculcate the knowledge and competence to the students. I got amazing teachers who provided the right intellectual stimulus that motivated me to go for higher studies. The learning in their practical classes has always helped me in conducting my own, as a teacher. I would like to thank the department and college fraternity for being an integral part of my life, career and personality.



Sandhyaya Rai
Batch: 1999-2001
Assistant Professor,
Deshbandhu College,
University of Delhi



Senjuti Sengupta
Batch: 2016-2019
HERF Research Fellow (Cancer
Immunology),
LV Prasad Eye Institute,
KAR campus,
Hyderabad

At Acharya Narendra Dev College, I was not only taught under a demanding academic schedule, but also given boundless space and support to explore my skills and shortcomings as a young adult and burgeoning biology enthusiast entering the academic field. I was exposed to stimulating ideas and was pushed to my intellectual limits, which in turn helped me develop as an individual, mentee, researcher, and student of life!

Sarita mam's joyful approach to education, Seema mam's unending generosity, Ravi sir's commanding yet inspiring presence, and the unwavering commitment of all of our teachers to our professional development will be indelibly etched in my memory. I owe a great debt of gratitude to ANDC for providing me with the groundwork for a career in research, including solid training in critical thinking, effective communication, and creative problem solving. I have many happy memories of my time at ANDC and I hope for nothing but the best for the organization in the future!

When I look back on my career path, I realize that the turning point was those three years in Acharya Narendra Dev college where I found my purpose. Clouds of doubts related to career vanished with the help of learned faculties. It has given me a direction, a new perspective and infused a sense of responsibility in me. The Learning ambience of the college is unparalleled. It provides every possible setting to mold pupils as per their capabilities and interests and persuade them to achieve desired goals. I learnt to become more focused and disciplined. I developed a habit of setting small goals and achieving them to move towards a big goal. Professors of Acharya Narendra Dev college molded me into what I am today. They continuously challenged and helped me to develop new abilities, sharpen my skills and broaden my horizons. The infrastructure and top notch laboratory facilities helped me to gain both theoretical and practical knowledge. My scientific acumen is broadly developed in the Ciliate Biology laboratory as a researcher. I want to specially thank Prof. Seema Makhija and Prof. Ravi Toteja, who always encouraged me to do better and became an ideal for me.

The most important thing I learnt was that there is no shortcut to success. The carbon needs to be cut, burnt, pressurized and finally polished to become a diamond. We should have dreams and we should work hard to fulfill those dreams.

I am very proud of my alma mater.



Shiv Jangra
Batch: 2014-2017
Assistant Professor Zoology,
RPS PG college.



Vatsal Bhargav
Batch: 2018-2021
Pursuing M.Sc Zoology from
Department of Zoology,
University of Delhi

First of all, if you're reading this, I would like to congratulate you for having avidness and keen interest in scientific disciplines and general outlook in life. My name is Vatsal Bhargava, I've done my B.Sc (Hons.) Zoology from Acharya Narendra Dev College (ANDC) during the session of 2018-2021. Currently I'm pursuing M.Sc. Zoology from the Department of Zoology, University of Delhi. It is not wrong to say that ANDC is more school than college, but in a good way.

Here teachers focus on each and every student. Teachers are easy to approach and friendly, you can easily discuss any problems that you may come across be it academic or personal.

During my time studying in ANDC, I was fortunate enough to get a chance to participate in “ELITE” (Educational in Lively and Innovative Training Environment) summer internship, which was a paid internship (Rs.1000 per month) held during summer vacations. I also attended many workshops organized on campus like “Hands on training of ELISA (Enzyme Linked Immuno-Sorbent Assay) and Gel – electrophoresis” under the aegis of DBT Star College. Aside from these workshops I also attended some online workshops like “Learning Molecular Biology Techniques” and RBPT – Based Workshop on Bioinformatics. Aside from this, we students attended many conferences during our time in ANDC.

I along with my colleagues presented a poster in a One-day interdisciplinary exhibit presentation “New Frontiers in Science” and secured a position in top 5. Under teachers guidance I was given opportunity to attend International Summit on Women in Stem – “Visualizing the Future: New Skylines” organized by DEPARTMENT OF BIOTECHNOLOGY – MINISTRY OF SCIENCE & TECHNOLOGY, GOVERNMENT OF INDIA and ICGEB, held in Indian Habitat Centre, New Delhi. It was my first time participating in an international event, it was mesmerizing. Aside from this, I also attended the 10th Foundational Day of Transitional Health Service and Technology Institute (THSTI), which is a very good choice for pursuing higher education.

You will be very pleased to know that excursions are organized almost every semester, for example when I was in college we had multiple field excursions. Excursions are important not only for forming lifelong bonds and memories with friends but also to verify and experience the things we study in our textbooks through our own eyes. For example, during the first semester we went to Ranthambore National Park, Sawai Madhopur, Rajasthan, India for learning the ecological biodiversity while studying it in our Ecology core subject. While I was studying Sericulture we went to “Resham Vibhag” (Sericulture Department), Dehradun, Uttarakhand. And while studying apiculture, we had a one-day trip to ICAR – Indian Agricultural Research Institute, commonly known as Pusa Institute.

Aside from this we have many active societies like Dhun, Dhvani, Paritantra, Maayra, Tark, Sashakt and NSS. These societies play a crucial role in the development of a student's personality and help them in truly integrating with their peers. I'd like to encourage students to explore these societies and campuses to get a holistic experience. Here I'd also like to briefly mention and express my gratitude, to how much efforts our teachers at ANDC put during Covid times in not only helping us in our studies but also in encouraging and supporting us mentally.

Finally, I wish the readers Good luck in your future endeavors.

Acharya Narendra Dev College has helped me to shape my career in many ways. I have been fortunate to study B.Sc. (Hons.) Zoology from ANDC and later on pursue Ph.D. from Ciliate Biology Laboratory. The college has helped me to broaden my thought process, enhance my knowledge, and gave me the required nudge to pursue my dreams. During my college time, I was encouraged to pursue higher studies, and during my Ph.D., I got the opportunity to be trained under the best faculty. The college provided me with all the research facilities that helped me in my learning process and developing my skills. Overall, I consider ANDC as the stepping stone in my career.



Dr. Jeeva Susan Abraham
Batch: 2007-2010



An Imaginary Realm of Zoology's Biomimicry

New research has been produced in a variety of fields, including material science, architecture, urban design, computer science and robotics, as a result of the flow of biological information into the design area: Biomimicry is a unique field inside this innovative space. Biomimicry has been around for a while, but concept gained popularity with Janine Benyus' 1997 book 'Biomimicry: Innovation Inspired by Nature'. The foundational work solidified the idea of biomimicry and distinguished it from comparable techniques by highlighting its emphasis on sustainability. Since then, the expression of biomimicry's potential has grown quickly, as seen by the rise in its linked practitioners, educational initiatives, and patented products.

According to some, the discipline of biomimicry is fascinating; it offers fresh perspectives on and appreciation for environment; and its methodology "will inspire new mind sets, values and narratives surrounding the relationship between humans and nature and alternative visions of development." Biomimicry is "a game changer when we hear it and comprehend it, we never see the world exactly the same ever again," according to Biomimicry South Africa.

Biomimicry proponents have predicted that it will bring about a revolution in technology, the environment and even society. Beyond delivering sustainable design, biomimicry is promoted as a fresh way of looking at nature.



Dr. Roopa Samal
Batch: 2008-2011
Assistant Professor
Department of Zoology
Dyal Singh College, University of Delhi



Abhay Pratap Singh
Batch: 2008-2011
Assistant Professor
Department of Zoology
Acharya Narendra Dev College,
University of Delhi

According to biomimicry's proponents, through encouraging a change in viewpoints, hierarchies, and beliefs, it is aiming to acknowledge the inherent worth of nature. It is predicated on the idea that nature serves as an inspiration rather than a resource and that natural systems are a source of knowledge rather than an object of knowledge. The dissolution of the notion that people have dominion over nature as we know it and the elimination of the romanticized notion of humans as a superior species are what biomimicry practitioners and supporters appear to promise. This is the most important contribution made by biomimicry, and it disturbs the idea of human uniqueness. It is hoped that through drawing inspiration from nature, humans would become more courteous, accountable, and modest in their interactions with both nonhuman and human life.

In order to fulfil these lofty expectations, practitioners promise technical advancements and raise expectations on the efficiency of biomimicry as a strategy for bringing about long-lasting, transformative change. The promises of biomimicry are presented as optimistic manifestations of a desired future. These declarations are significant because they aim to increase interest in biomimicry in general and certain expectations in particular. They could become generally accepted expectations of hypothetical future technology scenarios that draw investment after being described as such promises.

It's crucial to carefully examine the technological claims made by biomimicry's proponents given that. In order to evaluate the viability of biomimicry promises, it is essential to examine these bases upon which sustainability claims are made. This analysis promotes a critical and reflective view of the profession for current and prospective biomimics by outlining its possible flaws, ambiguities, and presuppositions. Such a study of biomimicry contributes a crucial reminder of the prerequisites for the fulfilment of a promising practice to the literature on biomimicry.

Tranquility in Music

“Music gives a soul to the universe, wings to the mind, flight to the imagination, and life to everything.”

~Plato

Music has such a profound effect on me that it touches and heals my soul. I have always admired musicians, even as a child. My parents have sent me to music lessons where I learned to play the piano for a year because of my enthusiasm. I used to melt every time I saw or heard someone perform music.

It captivated me so much that I immediately decided to cultivate that talent and skill in myself. Friends who sang so beautifully inspired me to learn as well. My parents, too, encouraged me because they saw my potential and the love I had for music since I was a child.

Music is my stress reliever and healer, and it allows me to feel any situation or circumstance more intensely. Although we live in a digital age where we are constantly surrounded by devices, I do not completely rely on them to meet my musical needs. Singing brings me peace, tranquillity, and confidence. I feel really good when people appreciate me and compliment my singing abilities; it makes me feel like I've evolved into the person I aspire to be. It has added to my repertoire of skills, fulfilling my mother's wish for her son to be an all-rounder. Even when I'm assigned a chore that I despise, I enjoy doing it when it involves music.

Singing gives me independence because I don't have to rely on anyone else when I sing. When I try to hit the correct pitch and scale, it gives me a sense of control over myself. Music gives me hope because it makes me feel good. It makes me believe that these difficult times will pass and that better days are ahead. It keeps me active in my spiritual life because the hymns I sing help me connect with God more deeply. Music gave me an amazing identity because everyone at school recognized me as such. This, in turn, gave me confidence, which allowed me to remain happy at heart.



Manu Sankar
Batch: 2012-15
Ph.D. Scholar, University of Delhi

Soft and melodious songs, in particular, are so soothing that just hearing them helps me unwind. I have a soft spot for slow songs because they directly touch my heart and transport me to another world. Singing it out allows me to feel everything I mentioned above, allowing me to experience yet another level of ecstasy. I like to listen to different types of songs for different moods that I experience, but these are the ones that I enjoy singing the most.



Student's Corner

ERA OF VIRUS

While thinking of the living world, we think about ourselves, big mammals, insects, plants, trees and aquatic life. But we generally forget about the life that is going on simultaneously with us and we are not able to notice it. This is the world of microbes which is not visible to us easily but affects us to a very high level. No one needs proof of this in the present scenario. Isn't it interesting that from being a small topic in schoolbooks, viruses became the talk of the town overnight and even changed the perspective of a classroom?

It is reported that viral epidemics started in the Neolithic period, about 12000 years ago, when human settlement patterns changed to densely populated communities in the hospitable areas. Human dependence on agriculture and livestock increased, then the initial cases of virus infection in plants were observed causing curling and yellowing of leaves, and then spread to livestock, though the cause was unknown at that time. During the period, *Homo sapiens* were able to tolerate them but as said, change is the rule of nature, things changed.

In the past centuries, viruses have spread at an alarming rate all over the world. Ranging from common flu to many of the epidemics witnessed, viruses became the sole cause for them. Be it smallpox, measles, influenza, AIDS, yellow fever, rinderpest, poliomyelitis or the very recent one, the COVID-19 infection, which became one of the worst pandemic ever in history. A total of 65.3 lakh deaths were reported all over the world on the official front, no one knows the actual number. SARS CoV-2 was not the end, but the beginning of the viral outrage. Nipah virus, West Nile virus, lumpy skin disease virus and many more are on the gate. It is noteworthy that viruses as an entity came into notice in 1892 to Dmitri Iwanowski, as the one who could pass bacteria-proof filters, one whose existence as a living organism is still debatable, taught us the importance of life. The most important lesson that it gave us is that we should never underestimate someone; size is not the indicator of power, but the potential someone has defines him. It is not wrong to say that we are being ruled by this acellular microscopic organism as we are in the era of viruses.

Anshika Sharma
B.Sc. (Hons.) Zoology
II year

अधूरी मंज़िल

मंज़िल भी नहीं बदली, मेरा ख्वाब नहीं बदला
मंज़िल को पाने का जज़्बा भी नहीं बदला।

कश्ती को हवाओं ने हर ओर उछाला था,
पर मेरी कश्ती का साहिल भी नहीं बदला।

हमदर्द तो थे मेरे, कहने को हज़ारों में
सब दुश्मन बन बैठे, चेहरा भी नहीं बदला।

एक शख्स था यादों में, हर साँस में रहता था
वो भूल गया मुझको, मेरा प्यार नहीं बदला।

वो थोड़ी सी निभा लेता, आखिर तो मोहब्बत थी
हमने तो शिकायत में लहज़ा भी नहीं बदला।

नफरत की हवाओं ने हर चीज़ जला डाली
मेरे ख्वाबों के तिनके का नक्शा भी नहीं बदला।

जुनैद मुज़प्फर
बी.एस सी. (विशेष) जंतु विज्ञान
तृतीय वर्ष



भीड़

गानों की तेज़ आवाज़ से आकाश के घर को पहचानने में मुझे कोई दिक्कत नहीं हुई, भले ही मैं पहली बार उसके घर गई थी। पूरा घर मानो खुशबू से महक रहा था, आखिर इतनी बड़ी खुशी का समय था। मेरे बचपन का दोस्त आकाश, जिसकी कल शादी है, अभी-अभी हल्दी के चौक से उठा है।

“अब आई हो, कहा था ना कि हफ्तेभर पहले आना है।” “सॉरी आंटी, बड़ी मुश्किल से 3 दिन कि छुट्टी लेकर आई हूँ, इस समय छुट्टी कहाँ मिल रही है,” मैंने आकाश की माँ से कहा। गर्मजोशी के साथ मैं सबसे मिली और झट से वहाँ चल रहे नाच-गाने का हिस्सा बन गई। दोस्तों और रिश्तेदारों से पूरा घर भरा हुआ है, दूर-दूर के सभी रिश्तेदार बुलाये हैं। आकाश की माँ और बड़ी बहन से मिलने के बाद मैंने बुआ और ताऊजी के बारे में पूछा।

“दीदी, बुआ और ताऊजी नहीं दिख रहे, कहीं छुप के डांस प्रैक्टिस तो नहीं कर रहे, आखिर उनके इकलौते भतीजे की शादी है,” मैंने मज़ाकिया अंदाज़ में कहा। आकाश के बुआ और ताऊजी ने अपनी जिंदगी आकाश के लिए जी, दोनों की ही शादी नहीं हुई थी और सभी लोग एक ही घर में रहते थे। छोटी उम्र में ही आकाश ने अपने पिता को खो दिया था, कच्ची उम्र में उसके लिए वह बहुत कठिन समय था। उस समय ना सिर्फ बुआ और ताऊजी ने परिवार को संभाला बल्कि पिता के सामान ही दोनों बच्चों को प्यार किया। उन दोनों की ही जान था आकाश! दोनों बच्चों को पढ़ाया-लिखाया, ज़िम्मेदारियां निभाई, दीदी की शादी की और आकाश को इस काबिल बनाया कि उसने शादी से दो साल पहले अपना घर खरीद लिया था।

मेरे मुँह से बुआ और ताऊजी का नाम सुनकर सबके चेहरे की हँसी मानो बिल में छुप गई और उनको चुप खड़ा देखकर मैं सोच में पड़ गई कि आखिर मैंने ऐसा क्या गलत कह दिया। माहौल की नज़ाकत को देख मैंने वहाँ से चुपचाप निकलना ही ठीक समझा लेकिन मेरे शब्दों ने लोगों को बातें करने का खूब मौका दिया।

अगले दिन सुबह से ही बरात की तैयारियाँ शुरू हो गई, कोई अपने कपड़े ढूँढ़ने में लग गया तो कोई मैचिंग ज्वेलरी के बंदोबस्त में, मैं खड़ी-खड़ी बुआ और ताऊजी की राह देख रही थी। जयमाल, फेरे, संगीत, किसी भी कार्यक्रम में वे नहीं थे।

अगले दिन सुबह-सुबह मैं वापसी के लिए निकली, “आती रहा करो, अब इतना लम्बा समय मत लगाना आने में, आखिर तुम भी तो इस परिवार का हिस्सा ही हो,” आकाश की माँ और दीदी के ये शब्द मेरे कानों में गूँज रहे थे और साथ ही गूँज रहे थे कमला आंटी के शब्द, “बेटा, अब तुम्हें क्या बताऊँ? आकाश और बुआ-ताऊजी के बीच कुछ भी सही नहीं है। दूर के रिश्तेदारों को अपना मानकर और उनकी बातों में आकर आकाश ने अपने सगे बुआ-ताऊजी से रिश्ता तोड़ लिया है, उन बड़े-बूढ़ों को उनके हाल पर पुराने घर में छोड़ दिया है”। मेरे ज़्यादा पूछने पर उन्होंने मुझे बताया। कमला आंटी आकाश के ही परिवार की ही थीं और उसके पुराने घर की पड़ोसी भी।

अपने पाँच घंटे के सफर में ट्रेन की सीट पर बैठी मैं यही सोचती रही कि कितना आसान है अपनों को छोड़ गैरों को परिवार का हिस्सा बनाना, लोगों को इस्तेमाल कर उन्हें भुला देना, बड़ों के आशीर्वाद को छोड़ ‘भीड़’ को खुश करना, उसे अपना मानना। जिस शादी में आकाश ने अपने रिश्तेदारों के भी रिश्तेदारों को बुलाया था, उस शादी में आकाश के अपने सगे रिश्तों के लिए कोई जगह नहीं थी, और ना ही उस भीड़ में कोई ऐसा था जो उसे सही-गलत समझा सके।

पता नहीं कि सच में मैं परिवार का हिस्सा थी या शादी में बड़ी संख्या में शामिल हुई भीड़ का!

अंशिका शर्मा

बी.एस सी. (विशेष) जंतु विज्ञान

द्वितीय वर्ष

Wildlife Photography



***Coracias benghalensis* (Indian roller bird)**

**Image location - Kaziranga National Park,
Assam**

**Aparna Chowdhury
B.Sc. (Hons.) Zoology
I year**



***Crocodylus palustris* (Mugger Crocodile)**

**Image location - Delhi Zoo
Dhruv Bhasin**

**B.Sc. (Hons.) Zoology
II year**



***Boselaphus tragocamelus* (Nilgai)**

**Image location - Delhi Zoo
Dhruv Bhasin**

**B.Sc. (Hons.) Zoology
II year**



***Felis catus* (Cat)**

**Dhruv Bhasin
B.Sc. (Hons.) Zoology
II year**

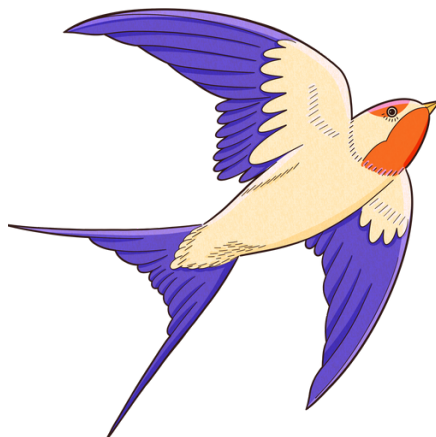
Leave the Nest

There's only so much you can do,
When your dreams call
Sprouting little wings
And I might fall.
But standing here, it looks so huge
There's a world beneath me, and an ocean so blue
When you're confused and afraid
But you just can't help
That's the time to leave the nest!

There's only so much you can do,
When the leaves fall
That everyone has their bad days
Even the empires that stood tall.
Flying in it looks so warm
There's a sky above me and it has a similar charm,
When you're doubtful and scared
But you just can't help
That's the time to leave the nest!

There's only so much you can do,
When you're standing in a crowded hall
But you're not alone
You'll find your shoal.
Now that I am here,
There's a sky above and the
embraces me,
Now that I'm brave and sure and finally at peace
Thinking how I couldn't help
That was just the right time to leave the nest.

Diya Bilhari
B.Sc. (Hons.) Zoology
I year



COMING BACK TO INDIA

This year, 2022, has a great importance in Indian history as we completed 75 years of independence. Apart from this, the year became special for the wildlife lovers also as on 16 September, the country welcomed 8 *Acinonyx* (cheetah) under African Cheetah Introduction Project of Project Cheetah Initiation, in Kuno National Park, Madhya Pradesh. Their wait is as old as that of our independence.

The word 'cheetah' is derived from the Sanskrit language meaning the spotted one. Once the royal member of the southwest Asia, Asiatic Cheetah used to rule a large section of the country ranging from Tamil nadu to Rajasthan. Neolithic Cave paintings in Central India are enough to tell us about the wide existence and glory of the fastest land animal in the region. But the consecutive efforts to domesticate them led to their complete loss. They were hunted and tamed to hunt other animals by the kings of the Mughal, Maratha, Rajput period and by the Britishers also. The same practice continued in the 20s by the local people also. There was excessive hunting, habitat loss, poaching and domestication of the sixth ranked member of the big cat family. Their number kept on decreasing but no one cared. As per the records, the last lot of 3 cheetahs was shot by Maharaj Ramanuj Pratap Singh Deo of Surguja state in 1947 in eastern Madhya Pradesh. But a female cheetah was sighted in Koriya district in Chattisgarh in 1951. In the year 1952, cheetah was declared extinct from the nation by the Government of India.

Indian government made its first attempt to bring back the Asiatic cheetah in 60s and 70s. At that time the source for the same was Iran. Continued negotiation over 5 decades gave no fruit. In 2009, Jairam Ramesh, then Minister of Environment, conceived of introduction of African Cheetah (from Namibia and Kenya) in India and the chapter of Iran was closed in 2010. After a lot of discussions and hearings in the court, the treaty for the same was signed in July, 2020 with Namibia and the first lot of 8 cheetahs, 5 female and 3 male, landed on our land on 16 September, 2022, in exchange of 6 leopards. Within 5 years, India will be having 50 cheetahs from Namibia.

African cheetahs were chosen as they have the same genetics as of the Iranian cheetah. Research from a five-year genetics study found that Asiatic cheetahs split from the African cheetah between 32,000 and 67,000 years ago.

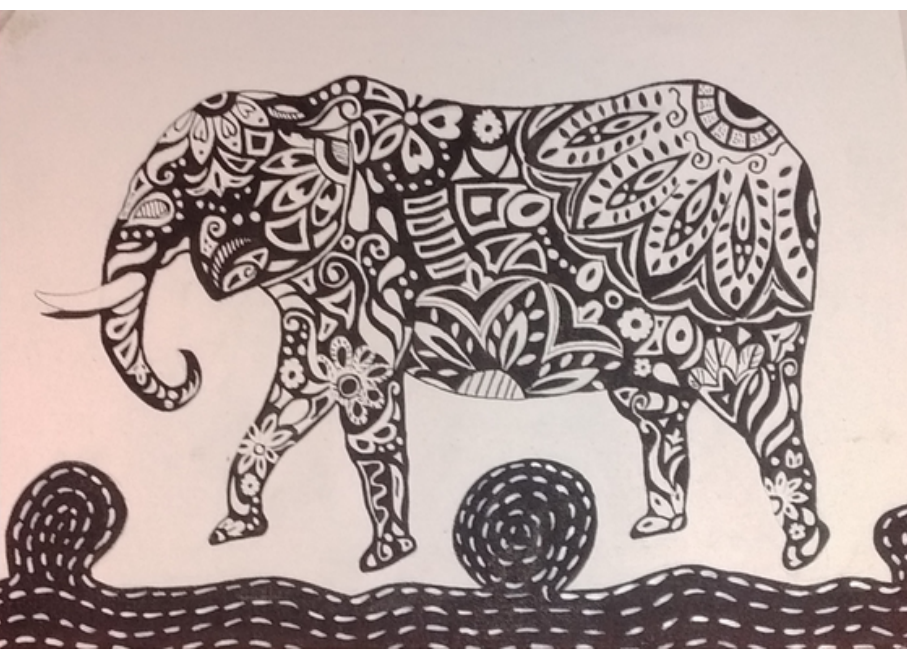
Therefore, they are two different subspecies. African cheetahs (*Acinonyx jubatas*) are slightly bigger and heavier than Asiatic cheetah (*Acinonyx jubatas venaticus*), and have sturdier legs and neck. Their speed is almost same. African cheetahs have more pronounced and densely distributed spots all over the body.

Kuno National Park, Madhya Pradesh is the first stay of the new guests. Here, they'll be kept under special care and will be studied well. KNP has all the facilities required for them; grassland, scrap forests, controlled poaching, petrolling, weed eradication, good quality and quantity of grass for their prey including deers, wild boars, blue bulls and birds.

Some wildlife experts have asked for the attention on the conservation of native species first who are on the verge of extinction instead of playing a risk game with the introduction of new animal. 'New guest' requires a large area to roam freely while nation has just 15% of the total geographical area as grassland. A cheetah requires about 100 sq. km area, this means that we can't have many of them in a single place, as this will lower their impact as the top predator.

Amid the row of questions, doubts, thoughts, it is worth waiting to see how these 8 cheetahs will adapt and respond to the Indian climate. Their response will decide the arrival of next 42 cheetahs in the nation. Planning and executing the first Wild Southern African Cheetah translocation and that of a vulnerable species numbering just 6,500 in the world is not really an easy task. Government has aimed to achieve 50% survival and their reproduction in the next 5 years. Success of this translocation will not only give the nation it's lost glory but will also pave a way to redistribute other animals also to their previous environments as a measure to ensure their contribution in the ecosystem and increase their number.

Anshika Sharma
B.Sc. (Hons.) Zoology
II year



Artwork by: Basab Bhattacharjee,
B.Sc. (Hons.) Zoology, II year

COLOR

Color is what people see
As color is what matters.
Black is evil as white is good
As black is the color,
People don't like.
As black is the mixture of
Every color.
As are humans mixture of
All emotions.
As demons are black
And god is white.
As is Jesus is for
white not for black?

As her mother tells her
No prince will be
There for her as she
Has the color 'keshava',
Her complexion is so pure
That it has everything in it.

She when looks herself she
Feels bad!
But society never changes,
As we feel black is obscure
And white is pure.
She is the black beauty
Riding the wave conquering
What she has to conquer.

Ankur Ghosh
B.Sc. (Hons.) Zoology
I year

THE VOICE WITHIN

The day starts with
My existence being questioned,
"Am I not worth any importance?"
As nobody takes my consideration.

'Selfish, Arrogant and Useless'
are my new names,
With no one by my side
to aid.

No one will understand me
My heart conceals all that,
'Parents can understand you',
I even doubt that.

Smile on my face,
But a turmoil inside.
Will I ever get the love
that I longed from time?

Endless nights were spent
crying in the dark
In the hope of light that
seems too far.

Toxicity surrounds me.
I am trapped,
I want to break free,
But again I fell back.

I long for care,
I long for understanding,
But I know
that my life does not have
a happy ending

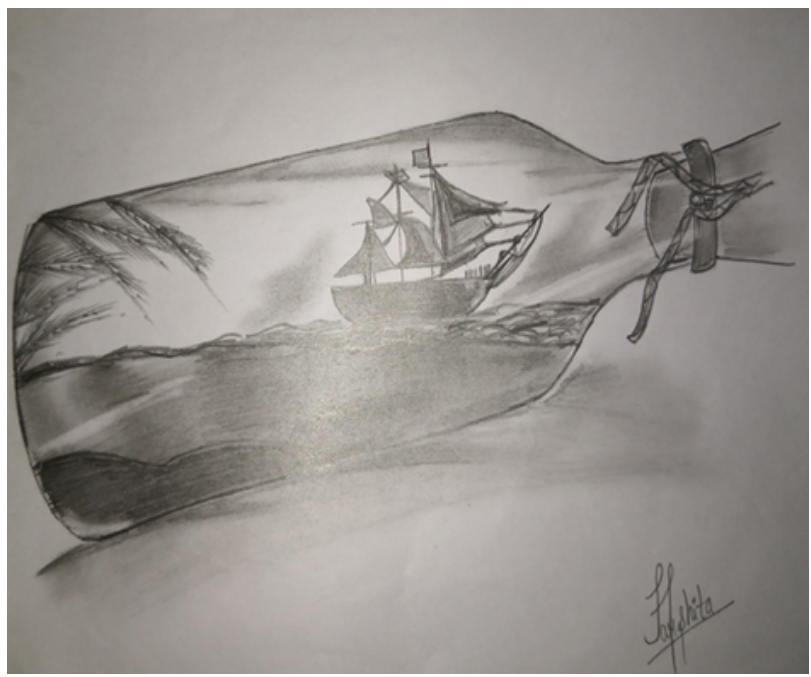
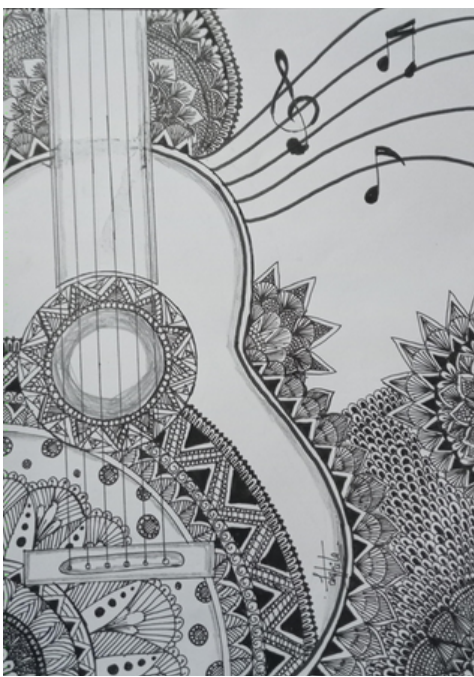
(Thoughts running in mind of a person who is depressed and fed up with life)



PARADOX

I am worn around
By the barbed wires of insecurity,
Yet I love myself,
To the point of narcissism.
I stand on diverging roads
Pacing back and forth,
Yet when I choose, I choose
To hold on to my blind faith.
I chase luck when I am being
Chased by misery,
Yet I yearn for misery, so I can
Behold my luck in solace.
I claim faraway lands and win battles for them,
Yet I deserted long ago, the lands
I used to call home.
I hold me tight and whisper this too shall pass,
Yet I am haunted by the pages
That turned to birth these memories.
I longed to grow up and live my life,
The way it would unfold.
Yet I walk by and stop, watching me crave
At the candy shops,
For all I've known and all that's come and gone,
For me, I am the biggest paradox.

Diya Bilhari
B.Sc. (Hons.) Zoology
I Year



Artwork by: Harshita Kushwaha, B.Sc. (Hons) Zoology,
II year

ये सब अपना किया कराया है

क्यों घबरा रही है कुदरत उसका दम निकला है,
सर पर जो था ताज बर्फ का, बस वो पिघला है,
पर हमें फर्क इतना कि थोड़ा मौसम बदला है।

मुझे याद है वो दिन जब आसमां पर खाली बादल छाये थे,
हम सभी खाली बादलों से बस यही उम्मीद लगाये थे,
कि कुछ रुख बदले तो मौसम को जवानी मिल जाये,
और इसी बहाने लोगों को पीने का पानी मिल जाये।

कहीं बरसा ऐसा कि मन्दिर, मस्जिद सब टूट गये,
और कहीं तरसे ऐसे कि, खेत-खलिहान सब रूख गये,
पर कितने शहर सूख गये, कितने शहर डूब गये,
जल प्रताप बढ़ा इतना कि किनारे वाले लुट गये।

करवट ली कुदरत ने ऐसी कि, हर जगरा-जगरा थर्राया है,
पर हैरानी की बात नहीं है, ये सब अपना किया कराया है।
आग लगी ऐसी जंगल में कि हवा में सिर्फ धुआँ-धुआँ लहराया
पर हैरानी की बात नहीं है, ये सब अपना किया कराया है।

शिवांश लाठी

बी.एस सी. (विशेष) जंतु विज्ञान
द्वितीय वर्ष



Artwork by: Dhruv Bhasin,
B.Sc. (Hons.) Zoology
II year



SHE

She is broken from inside.
Everyday she fights,
Everyday she faces judgment.
If you wear short you are
Liberal, want to ruin culture.
If you were traditional
You are timid and not so smart.
She when tries to be her
Her mouth is shut,
Telling that you have no right.

She who is responsible for life
Is deprived of life.
She cries but she never
Shows..
She stands the fire so
That people around her are safe.
She just wants to her and
Fly Fly Fly...
Far away to a place,
Where she could truly be she.
She is so beautiful but
The scars on her mind
Are as brutal as she has taken
All the hits of her being
A Girl.

She when decides to fight,
She fights and she is
The one who could destroy
What she created.
She is the broken girl
Taking all scars
And now she is the strong
Independent destroyer.
Who could show the world,
What a girl can do.
All the break free and be the
One who she really is.

Ankur Ghosh
B.Sc. (Hons.) Zoology
I Year



Find if you Can

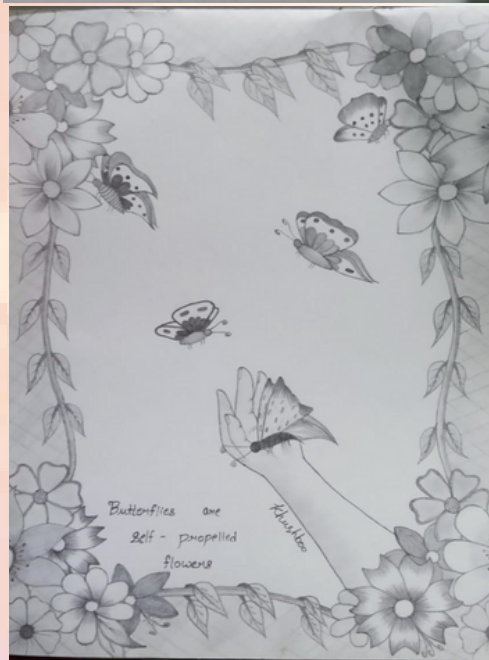
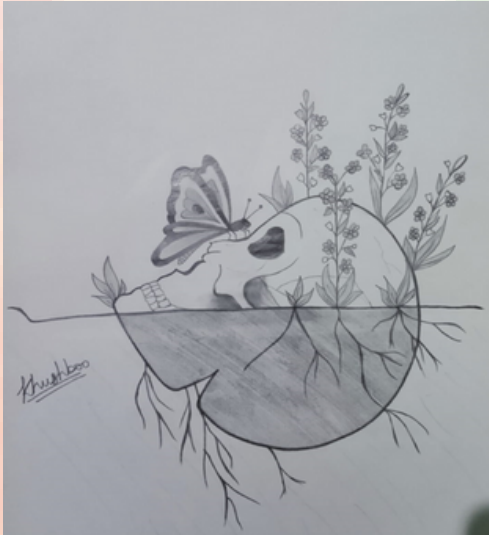
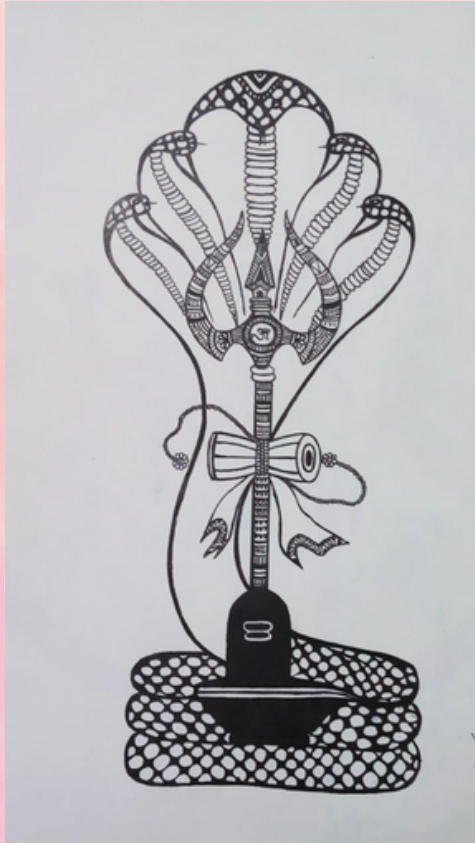
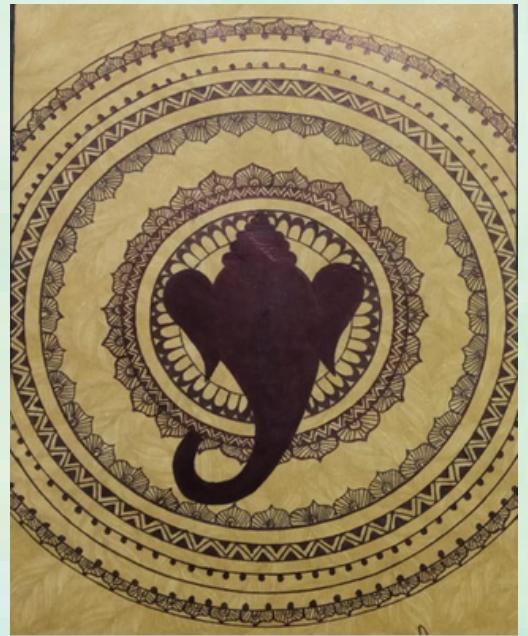
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M	K	A	R	W	O	P	A	W	S	L	D	V	D	M	U
I	N	N	D	E	C	F	R	E	C	H	I	D	N	A	S
S	Z	K	A	Z	I	R	A	N	G	A	G	S	F	P	C
R	C	T	V	Z	N	B	Y	T	P	M	A	P	J	P	Z
A	I	O	Q	N	J	H	E	G	B	W	H	D	K	E	M
O	B	N	M	X	T	Q	N	E	O	P	I	L	I	N	A
F	S	S	N	V	A	L	I	N	E	U	B	C	A	D	N
G	E	A	P	T	Y	R	A	O	M	P	N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

1. Birth hormone
2. Scientist discovered cell nucleus
3. Hollow tube of nervous tissue
4. India's first vaccine against COVID-19
5. Vestigial organ connected to large intestine
6. Entire set of DNA instructions in a cell
7. Oviparous mammals
8. Connecting link between phylum Annelida and Mollusca
9. Organisms that flow with the water current
10. Father of Indian Ecology
11. Oldest National Park of India

Anshika Sharma
B.Sc. (Hons.) Zoology
II year



Artwork by: Deepika Sharma
B.Sc. (Hons.) Zoology
II year



Artwork By : Khushboo
B.Sc. (Hons.) Zoology
II year

SYMBIOX

NICHE, the zoological society of Acharya Narendra Dev College organized its annual Departmental fest "SYMBIOX" on 06 April, 2022. The event was inaugurated with the lamping of light by honourable Prof. Ravi Toteja (Officiating Principal) and Dr. Monica Misra (Teacher-in-Charge) along with students of department. There were in total 6 events planned for the students of the department. The fest was a grand success. Students, teachers and non-teaching staff enjoyed it to the fullest. Winners were awarded by exciting gift hampers.



1 **COMPULSIVE LYRE** - The event was organized to test the craze of students for music and how keenly they observe eyes of various actors. The game was divided into 3 levels.

2 **WIZ ESCAPE** - Participants in pairs were locked inside a room. They had to solve clues and the first pair to escape the room wins.

3 **GAMEPLAY GALORE** - A small arena was created which included games like Bend your Butts, Balloon Stomping etc.

4 **STARE THE CHAIR** - Musical chairs !! Participants had to secure one seat as the music pauses. The one who fails to sit on one gets eliminated.

5 **MUDDLED GRID** - The students were expected to be in teams. Each team was given an envelope having different zoomed photo of the college. They had to unscramble the puzzle and identify the place and take a groupie at that place.

6 **LENS THE BIOTA** - Biodiversity Exhibition.



ACHARYA NARENDRA DEV COLLEGE
 (University of Delhi)
NICHE
 THE ZOOLOGICAL SOCIETY
SYMBIOX 2022
 PRESENTS
COMPULSIVE LYRES
 TIME-10:30 AM - 12:00PM
 VENUE: ROOM NO.66
 RADHIKA 9654988258
 GUNJAN 8950091172
 RAJKUMAR 8800727312
 DIVYA 8287492704

ACHARYA NARENDRA DEV COLLEGE
 (University of Delhi)
NICHE(THE ZOOLOGICAL SOCIETY)
SYMBIOX 2022
 6TH APRIL 2022
 STARE THE CHAIR
 TIME:10AM ONWARDS
 VENUE: ZOOLOGY DEPARTMENT
 Shalini 9728053005
 Nitesh 8287492704
 Mohit 8433187363
 Divya 9650056982

ACHARYA NARENDRA DEV COLLEGE
 (University of Delhi)
NICHE(THE ZOOLOGICAL SOCIETY)
 PRESENTS
SYMBIOX 2022
 6TH APRIL 2022
LENS THE BIOTA
 TIME-10:00AM ON
 VENUE: BADMINT
 JASMINE 8233228539
 RITIKA 8233228539

ACHARYA NARENDRA DEV COLLEGE
 (University of Delhi)
NICHE THE ZOOLOGICAL SOCIETY
SYMBIOX 2022
 PRESENTS
GAMEPLAY GALORE
 TIME-10:00AM ON
 VENUE: BADMINT
 Avanija 8375063068
 Ronak 9599909890
 Ritika 8287058932
 Sejal 8696919051
 Yash 9811328441
 Virender 7357960321

ACHARYA NARENDRA DEV COLLEGE
 (University of Delhi)
NICHE(THE ZOOLOGICAL SOCIETY)
 PRESENTS
SYMBIOX 2022
 TIME:1:00PM TO 3:00PM
 VENUE:ROOM NO. 66
MUDDLED GRID
 SOLVE YOUR WAY OUT OF PUZZLE
 SAHIL 9971961856
 PREETI 9971961856
 SUNIDHI 9310485650
 APURV 8296658338



2022

ANNUAL REPORT

Department of Zoology

ANNUAL REPORT

Department of Zoology, ANDC, established in 1994, has successfully completed its 25 years and is stepping ahead high headed.

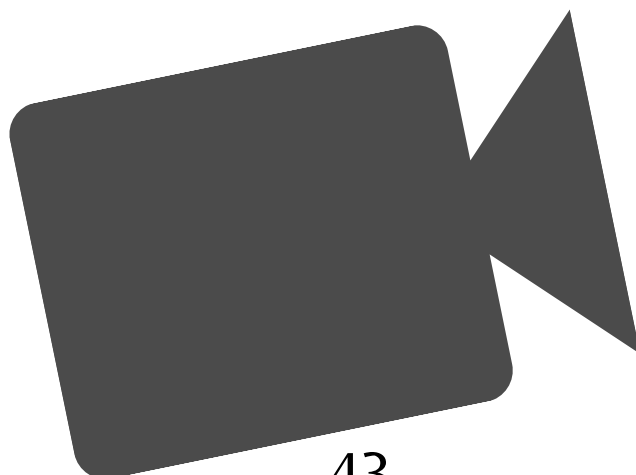
NICHE (Department of Zoology) has seen many phases during its journey and the unforgettable one is the lockdown period. Induced lockdown in March, 2020 has hit hard the education but NICHE tried it's best to compensate the losses and characterized 'Something is better than nothing.' Abrupt switching from offline to online and then online to offline, department didn't miss educational and fun activities including fresher and farewell parties but did all with the same zeal and enthusiasm. A number of workshops and conferences were organised during the period. Introduction of Virtual Lab (V Lab) and Zebra Fish culture facility in the year 2022 added stars on the shoulder.

OPEN EDUCATION INITIATIVE

Acharya Narendra Dev College is known for being a pioneer in Open Educational Resources (OER) within the University of Delhi. Being committed to OER, the college became an institutional member of the Creative Commons network in May 2018. Prof. Sarita Kumar attended the CC Global Summit virtually held during 20-24 September, 2021, which was attended by a large number of open evangelists throughout the world. In order to promote 'Open Education' among students and academicians across India, an online talk on 'License And Copyright Considerations in E-content Development' was organized on 17 December, 2021 using Google Meet. The talk was given by Prof. Savitri Singh, Country Lead, Creative Commons, India. She addressed the faculty members of Holy Family College of Nursing and made them aware about the OER, CC licenses and copyright issues while developing e-content.

Virtual videos created by students of NICHE -

<i>Title</i>	<i>Students (2021-22)</i>	<i>URL</i>
Mitosis Animation	Sanskriti Anju Ritika (II Year)	https://youtu.be/Zr4tx-5eY3YM
Cell types in blood	Junaid Manshi Sneha Shreyansh Shruti (II Year)	https://youtu.be/Zr4tx-5eY3YM
Mitosis	Sanskriti Anju Ritika (II Year)	https://youtu.be/dsqonIgZQLU
Blood Group Determination	Junaid Manshi Sneha Shreyansh Shruti (II Year)	https://youtu.be/s7fGvHanxjI



SCHOLARSHIPS AND AWARDS (2021-22)

- Krishna Toteja Memorial Scholarship - Prof. Ravi Toteja, faculty member and officiating Principal of the college, have initiated this scholarship (academic session 2016-17 onwards) in the memory of his mother. One scholarship of Rs. 6,000/- (Rupees Six Thousand only) per year is awarded to a meritorious and needy girl student of B.Sc. (Hons.) Zoology. This year the scholarship is awarded to Sanskriti, B.Sc. (Hons.) Zoology, II Year.
- Radhika Garg and Khushi Goyal (III year) received the Meritorious Students' Award from University of Delhi. Faculty of Science, University of Delhi rewards the meritorious students who are pursuing science courses from colleges of University of Delhi. The amount of this award given is Rs. 3,000/- (Rupees Three Thousand only) which is to be used by the student for the purchase of books.
- Manshi (II year) and Ritika Chandel (II year) received the Student Aid for Knowledge, Success, Honour and Motivation (SAKSHAM) full fee waiver.

WORKSHOPS, CONFERENCES, TRAINING PROGRAMS

- **Online workshop** on Initiating Virtual Labs in collaboration with IITD on 24 August, 2021 organised by Prof. Seema Makhija.
- **Seven days Hands-on workshop on Biological Techniques from 27 Sept – 04 Oct, 2021** organised by Prof. Seema Makhija, Mr. Ravinder Sagar, Dr. Aparna Sharma, Dr. Sweety Shrimali, Dr. Rahul Dev, Mr. Vineet Girdharwal (Zoology) and Mr. Abhay Pratap Singh (Environmental Science).
- Co-organized **6th Annual International E-Conference of Indian Network for Soil Contamination Research on microbes in Sustainable Development” from 15-18 November, 2021**. The event hosted 30 International and 40 national speakers of international repute. Two Pre conference workshops namely, Art of scientific writing and communication, and Hands on to computational Biology, for (Meta)genomic analysis were also organized for undergraduate, postgraduate students and research scholars. Prof. Ravi Toteja and Prof. Seema Makhija were the organizers.
- **IP Awareness/Training Program** under the National Intellectual Property Awareness Mission by the Intellectual Property Office, India, on 29 December, 2021 was organised by Prof. Seema Makhija.
- The College also took initiative for school students by initiating the scheme of avant-garde research projects in which the college will provide funding to selected projects to promote Science among the school students.
- This Year, College organized three outreach activities for school students.

- **Science ADDA** 14 schools registered for the workshop. The event was organised to give hands-on demonstration of some simple easy to do experiments by different departments of our college including Physics, Chemistry, Computer Science, Electronics, Biomedical Science, Zoology and Botany.
- **ECOVILLE** It was organized on 27 February, 2022 as a part of the E- conference that invited avant-garde research projects, video presentations, environmental quiz and paper presentations. The highlight of the day was the inauguration of Virtual lab presided over by Dr. Garima Gupta, Scientist, Department of Biotechnology, Govt. of India. Outreach program not only sought to introduce young minds to the infinite spectrum of research and innovative thinking, it also encouraged them by funding avant-garde projects, awarding exciting prizes for quiz winners and best presenters, while providing participation certificates to all.
- **Mitigating Contemporary Environmental Issues by Sustainable Approaches (ICMCESA – 2022) from 22-28 February, 2022.** The event hosted speakers from USA, Slovenia, Australia, UK, Uruguay, and Czech Republic. There were a total of 16 keynote and 28 invited talks, inclusive amalgamation of professors, academicians, scientists, ecologists, and law practitioners etc. There were more than 100 oral presentations by undergraduate, postgraduate research scholars and faculty traversing the entire nation from Kashmir to Kerala. There were 51 oral presentations by the faculty and students of ANDC where they got the opportunity to present their work.
- **MICROSPHERE 2021** An online International Outreach Program celebrating the International Microorganism Day under the aegis of Science Foundation, Synapses and INSCR was organized by Prof. Seema Makhija.
- Two days Hands-on workshop on **Tools and Techniques of Biotechnology from 07-08 April, 2022** organised by Prof. Seema Makhija, Mr. Ravinder Sagar, Dr. Aparna Sharma, Mr. Vineet Girdharwal, Dr. Rahul Dev, Dr. Sweety Shrimali and Ms. Bhumika Chauhan.
- Hands-on Training for Support Staff on **“Tools in Modern Biology”, 21 April, 2022** organised by Prof. Seema Makhija and Dr. Rahul Dev.



RESEARCH

The Star College Scheme was introduced by DBT to improve teaching learning methods in the science colleges and to encourage students to pursue higher education in science. Acharya Narendra Dev College being part of the DBT Star College scheme since 2017 conducts several Interdisciplinary projects and provide research exposure to students at UG level.

Following projects have been carried by the students -

<i>Title</i>	<i>Mentor</i>	<i>Student (2021-22)</i>
Purification and characterization of lysins from mycobacteriophages	Prof. Urmi Bajpai (Biomedical Science)	Pulkit Singh (III year)
Effect of chitin synthesis inhibitors on growth and biochemical parameters of insect pests of agricultural importance.	Prof. Sarita Kumar (Zoology)	Gunjan Grover (III year) Anaaf Asim Moin Charu Jaiswal Khushi Vashishtha Khushi Aggarwal Twishi Mishra Kanishka Bothra Divya Yadav Shruti Kumari Preeti Singh Sanskriti (II year)
Biological importance of heterocyclic compounds.	Prof. Ravi Toteja, Prof. Seema Makhija (Zoology) Dr. Pooja Bhagat (Chemistry)	Swati Maheshwari Ujjwal Kumar Gupta Radhika Garg (III year)
Mutations in SARS CoV-2	Prof. Sarita Kumar (Zoology)	Anshika Sharma (I year)

Apart from them, Department of Zoology has also the pride to publish two research papers of students.

Pulkit Singh and Komal Kotra (2019-22) published the paper titled 'Alternative Treatment Strategies for Secondary Bacterial and Fungal Infections Associated with COVID-19' along with Ritam Das (Department of Life Science, ANDC) under the mentorship of Dr. Urmi Bajpai (Department of Biomedical Science, ANDC), Belinda Loh, Sebastian Leptihn (Department of Infectious Diseases, Sir Run Run Shaw Hospital, Zhejiang University, China). The paper was published in November 2021 in Infect Dis Ther.

Rajkumar Jain (2020-2023) published the paper titled 'Impact of Climate Change on Respiratory Health' along with Priya Aryama and Tanushree Saxena (Department of Zoology, Swami Shradhhanand College, University of Delhi) under the guidance of Dr. Monica Misra and Ms. Bhumika Chauhan (Department of Zoology, ANDC). The paper was published in December 2022 in International Journal of Zoological Investigations.

Infect Dis Ther
https://doi.org/10.1007/s40121-021-00559-8



REVIEW

Alternative Treatment Strategies for Secondary Bacterial and Fungal Infections Associated with COVID-19

Ritam Das · Komal Kotra · Pulkit Singh · Belinda Loh · Sebastian Leptihn · Urmi Bajpai

Received: June 23, 2021 / Accepted: October 21, 2021
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ABSTRACT

Antimicrobials are essential for combating infectious diseases. However, an increase in resistance to them is a major cause of concern. The empirical use of drugs in managing COVID-19 and the associated secondary infections have further exacerbated the problem of

antimicrobial resistance. Hence, the situation mandates exploring and developing efficient alternatives for the treatment of bacterial and fungal infections in patients suffering from COVID-19 or other viral infections. In this review, we have described the alternatives to conventional antimicrobials that have shown promising results and are at various stages of development. An acceleration of efforts to investigate their potential as therapeutics can provide more treatment options for clinical management of drug-resistant secondary bacterial and fungal infections in the current pandemic and similar potential outbreaks in the future. The alternatives include bacteriophages and their lytic enzymes, anti-fungal enzymes, antimicrobial peptides, nanoparticles and small molecule inhibitors among others. What is required at this stage is to critically examine the challenges in developing the listed compounds and biomolecules as therapeutics and to establish guidelines for their safe and effective application within a suitable time frame. In this review, we have attempted to highlight the importance of rational use of antimicrobials in patients suffering from COVID-19 and boost the deployment of alternative therapeutics.

Keywords: Antimicrobial peptides; Bacteriophage; COVID-19; Drug repurposing; Nanoparticles; Secondary infections

Ritam Das, Komal Kotra and Pulkit Singh contributed equally to this work.

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Impact of Climatic Change on Respiratory Health

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Abstract: Threatening effects of climate change are widely visible to the entire population. Though known to all, its adversity is understood only by a handful. With this study, we aimed to broaden its reach. Aiming at creating a louder voice of climate change, we wish to enlighten people about the adverse health effects it has in store for us. While reasons and results may be innumerable, yet precautions are few. Innumerable unknown repercussions have been approximated as well. Naturally occurring gases like carbon dioxide, nitrogen oxides and black carbon cause air pollution which aggravates allergenicity of plants causing earlier and longer pollen seasons. This worsens the situation for people already prone to asthma, allergies and other respiratory tract infections. Additionally, climate changes can exacerbate the issue evermore. Though the effects are perceptible, the reasons and cures are still being studied extensively.

Keywords: Climate, Pollution, Respiratory diseases, Asthma, COVID-19

Citation: Jain Rajkumar, Aryama Priya, Chauhan Bhumika, Misra Monica* and Saxena Tanushri: Impact of climatic change on respiratory health. Intern. J. Zool. Invest. 8(2): 973-982, 2022.

<https://doi.org/10.33745/ijzi.2022.v08i02.115>

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Introduction

Climate change is a constantly aggravating situation which is hidden from none. The long-term effects which lead to changes in temperature and rainfall patterns are appertained to climate change. It is a global havoc created by man-made interventions. A change in climate has caused widespread problems and has put earth's ecosystem and life of unborn generations in trouble. The visible effects have grown dramatically over the past few years and it has

been estimated that it will grow fourfold in the next ten years if the present rates of deterioration continue. As per UN reports, an increase of 1.5°C in global temperature would help maintain survivable conditions but an estimate of 3.2°C increase has been drawn based on current climate plans.

Contrary to popular belief, climate change is not only about rising temperatures. It encapsulates fervent droughts, famine, dreadful

973

VISIT

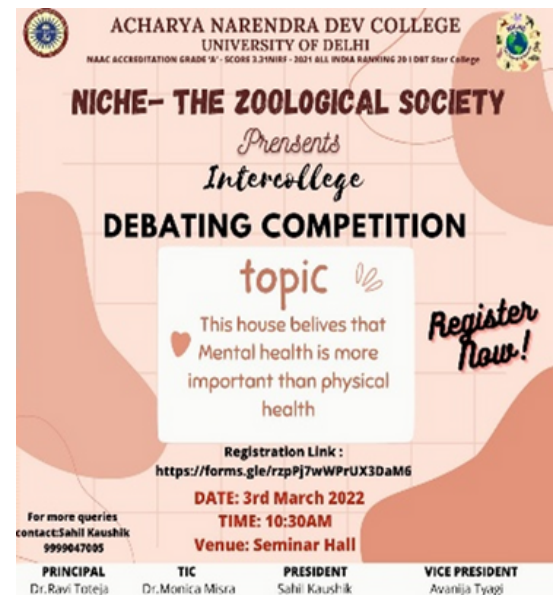
- **Visit to National Zoological Park:** A trip was organised by the Department of Zoology for 3rd year students to National Zoological Park formerly known as Delhi zoo on 29 September, 2022. Accompanied by faculty members, students got to know about nesting & parental behaviour, grooming behaviour, territorial behaviour, thermoregulation and more. Home of about 133 species of birds and animals, its centre of attraction are the endangered species including Asiatic lion, Royal Bengal tiger, Indian rhinoceros, Red Jungle fall. It was fun to observe and experience many of the concepts of Ecology studied in the first semester.
- **Visit to Sulabh International museum of toilets:** A trip organized by the Department of Zoology under the aegis of DBT STAR college scheme to Sulabh International museum of toilets on 18 April, 2022. The students learnt how they make sanitary napkins by own & sale them in affordable price. The museum had a rare collection of facts, pictures and objects detailing the historic evolution of toilets from 2500 BC to date. It provides a chronological account of developments relating to technology, toilet related social customs, toilet etiquettes, prevailing sanitary conditions and legislative efforts of different times. It had an extensive display of privies, chamber pots, toilet furniture, bidets and water closets in use from 1145 AD to the modern times. It also had a rare collection of beautiful poems related to toilet, their usage. Few photos of different toilets. The trip also enlighten us about how people use the toilets in hilly areas, forest areas in villages & still using. It was also explained that how the waste material is converted into fertilizer and the use of waste material into creating bio gas. How bio gas used in kitchen. Dr Pathak founded Sulabh International Social Service Organisation in 1970 and launched a social reform-cum-environmental upgradation movement taking up the challenge of sanitation related pollution leading to environmental degradation and health hazards caused by the practice of open defecation and use of bucket toilets.
- **Visit to IVF Centre:** A trip was organized by the Department of Zoology under the aegis of DBT STAR College scheme to South end IVF Centre on 05 April, 2022. Southend Fertility & IVF is the Best IVF Centre in Delhi that has helped thousands of couples conceive their own baby using advanced Assisted Reproductive Techniques (ART). Southend was founded by Dr. Sonia Malik, a renowned Fertility and IVF Specialist and Dr. Avtar Krishan, a leading anesthesiologist as a dream to offer comprehensive fertility treatment services and Test tube baby centre in Delhi. It was very informative and wonderful learning experience and students enjoyed learning about IVF processes.

- **Virtual tour of Aravalli Biodiversity Park:** This year we got an opportunity to virtually visit the Aravalli Biodiversity Park on 10 February, 2022 and understand the great features it holds. The Park also provides for a great open-air laboratory for students and researchers. Biodiversity parks like this are ideal platforms for promoting conservation education. Especially in times of COVID crisis, the virtual tours proved so efficient and helpful in understanding the entire system without having put ourselves to any risk.



COMPETITIONS & TALKS

- NICHE - The Zoological Society of Acharya Narendra Dev College organized an online Article Writing Competition on 06 February, 2022 on the topic 'Covid-19: A Blessing in Disguise for Endangered Species' and got many articles.
- The first offline event after the Covid-19 Pandemic was a moment of happiness and nostalgia, both. NICHE - The Zoological Society of Acharya Narendra Dev College organized a Debating Competition on the topic 'This House Believes that Mental Health is More Important than the Physical Health' on 03 March, 2022.
- NICHE invited Dr. Ved Prakash, Lab Director Southend Fertility & IVF, on 1 November, 2022. The session proved to be very informative and interesting both for the faculty as well as the students



VIRTUAL LABS

During the time of COVID everything was in a turmoil. Despite the adoption of online education, mode of learning could not compensate for classroom and laboratory learning. Lack of practical knowledge was a burning issue that's when Virtual labs came to our rescue. Virtual Labs is a project initiated by the Ministry of Education, Government of India, under the National Mission on Education through Information and Communication Technology. It is an initiative under DBT STAR COLLEGE SCHEME. The project aims to provide remote access to laboratories in various disciplines of Science and Engineering for students at all levels from undergraduate to research.

The department of Zoology has successfully created it's own virtual lab and has 4 experiment that are complete with animations and simulator. These experiments also has quizzes with large question bank which helps the students to brainstorm their minds. Various other experiments are also under works which will cover the wider aspects of Zoology.

Prof. Ravi Toteja, Prof. Sarita Kumar, Prof. Seema Makhija, Dr. Rahul Dev and Mr. Sanjay (Zoology) are the main guides for the same.

Following animations have been created by B.Sc. (Hons.) Zoology students:

<i>Title</i>	<i>Students (2021-22)</i>
Isolation of genomic DNA from <i>E.coli</i> DH5-alpha cells	Avanija Tyagi Ritika Chandel Sejal Arora (III Year)
Isolation of plasmid DNA from <i>E.coli</i> DH5-alpha cells	Avanija Tyagi Ritika Chandel Sejal Arora (III Year)
Enzymatic activity of trypsin	Rajkumar Jain (II Year) Basab Bhattacharjee (I Year)
Web page of enzymatic activity of trypsin	Rajkumar Jain (II Year)

Students currently involved with V Lab –
Rajkumar Jain (III year)
Harshita Kushwaha (II year)
Sheelam Saroj (II year)
Khushboo (II year)
Basab Bhattacharjee (II year)

The screenshot displays the V-Lab @ ANDC website. At the top, a dark green navigation bar contains the V-Lab @ ANDC logo and links for Home, Labs, About, and Quick Links. Below the navigation bar is a large banner image of a building with a red roof. A semi-transparent black box with white text reads: "Welcome !! ANDC's legacy- Never regard study as a duty But as an enviable opportunity to learn.....".

Below the banner, there are two white boxes with text. The first box contains the text: "Variation allows some individuals within a population to adapt to the changing environment. Because natural selection acts directly only on phenotypes, more genetic variation within a population usually enables more phenotypic variation." The second box contains the text: "Isolation of Plasmid DNA from *E. coli* DH5 α cells. The term 'plasmid' was coined by Joshua Lederberg in 1952, referring to the extrachromosomal DNA of an organism. It is the extrachromosomal DNA of an organism capable of self-replication as well as horizontal transfer, and confers certain characteristics to the bacterium, such as antibiotic resistance, etc."

The main section of the page is titled "Enzymatic Activity of Trypsin". Below the title is a dark green navigation bar with icons and labels for: Aim, Theory, Procedure, Animation, Simulator, Observations, Result, and References.

The simulation interface is shown below the navigation bar. It features a 3D illustration of a laboratory setup. On the left, there is a rack of test tubes containing yellow liquid. In the center, there is a centrifuge machine with a digital display and a "Start" button. To the right of the centrifuge, there are three bottles of different colors (blue, purple, and pink). The background is a light orange color with a white ceiling light.

On the right side of the simulation interface, there is a control panel with the following elements:

- A "Switch" button set to "ON".
- A "RPM selected: 1000" label with a horizontal slider bar.
- A "Timer: 5 Min" label with a horizontal slider bar.
- A "Centrifuge" button set to "Start".
- A "Next" button.
- An "Instructions:" section with the text: "Drag the overnight grown culture test-tube towards the eppendorf".

ZEBRA FISH CULTURE

Zebrafish Culture facility (Department of Zoology) under aegis of DBT Star Scheme was established at Acharya Narendra Dev College under the mentorship of Prof. Toteja and coordinatorship of Dr. Monica Misra in January 2022 with the aim to encourage scientific minds towards research, to gain hands on experience of lab work, to indulge in fascinating world of live animal research and to gain more empathetic attitude towards our environment and animals. We are the second College in University of Delhi that has ventured into establishing the Lab on Zebra Fish. The College has also got registered with the Institutional Animal Ethical Committee.

Zebrafish is considered a perfect animal model for research because of its small size, transparent body which helps to observe the inside anatomy of the fish without using specialised instruments or without having to dissect it, high no. of offsprings, fully sequenced genome with over 70% of annotated human genes, unique ability to repair heart muscle, relatively easy maintenance and breeding in the laboratory. The facility is currently being actively run by second and third year undergraduate students pursuing their ELITE research projects.

It is expected to allow students to inform action, gather evidence for theories, and contribute to developmental biology and knowledge in the field of zebrafish study, aiming to observe behavioural changes and reproductive cycle of zebra fish in a controlled environment. As immediate future endeavours, the facility aims to breed zebra fish, and then use them to study behavioural patterns which would help them to establish patterns in the fish and its resemblance to humans. Their ultimate aim is to take up human diseases and study them in Zebra fishes.

The research aims to inform action, gather evidence for theories, and contribute to developing knowledge in a field of study aiming to observe behavioural changes and reproductive cycle of Zebrafish in a controlled environment. Zebrafish holds a significant amount of potential in the developmental biology and biomedical sciences and toxicology. Due to the pandemic the students have been deprived of the practical knowledge thus this will encourage there scientific minds towards research and gain hands on experience of lab work, to indulge in fascinating world of live animal research and to gain more empathetic attitude towards our environment and animals.



Image by BrainFacts

EVOLVING WORLD OF IN VITRO FERTILISATION

To enhance the knowledge of world of *In Vitro Fertilisation* to the budding zoologists, Department of Zoology, Acharya Narendra Dev College, University of Delhi welcomed Dr. Ved Prakash, Lab Director Southend Fertility & IVF, Delhi NCR on November 1st, 2022, Tuesday.

Prof. Ravi Toteja, officiating principal, ANDC, welcomed the guest by presenting a plant. Respected speaker lit the lamp along with other teachers. Former president of Academy of Clinical Embryologist, Dr. Prakash explored the world of In Vitro fertilisation to students. He emphasised on the minute details of Intra Cytoplasmic Sperm Injection (ICSI). Virtual visits to his lab fascinated the students and the videos of ICSI succeeded in glimmering the eyes of the audience. The program conducted by Dr. Sushma Bhardwaj ended well with a healthy question-answer session between the audience and the esteemed speaker where he cleared all the doubts.

Prof. Seema Makhija, Teacher-in-Charge, honoured the guest with the present. Dr. Monica Misra, convener, proposed the vote of thanks. Mr. Ravinder Sagar, Dr. Aparna Sharma, Dr. Sweety Shrimali, Dr. Rahul Dev, Dr. Neelgagan Singh, Mr. Vineet Girdharwal, Dr. Shrankhla, Mr. Abhay Pratap Singh, Ms. Bhumika Chauhan, Ms. Ankita Rasaily and Dr. Yasheshwar graced the event with their presence.



Acharya Narendra Dev College
University of Delhi

MAAC Accreditation Grade 'Y' with Score- 3.31 | NIRF 2022 All India Ranking- 18 | IQAC & DBT Star College

Under the aegis of DBT Star College Scheme and IQAC

NICHE
THE ZOOLOGICAL SOCIETY
Organizes
TALK
on
**OVERVIEW OF
ASSISTED REPRODUCTIVE TECHNIQUE**

DR. VED PRAKASH
Lab Director Southend Fertility & IVF Centre

Tuesday, 1st November 2022 | 2:00 PM Onwards | Seminar Hall

PROF. RAVI TOTEJA (PATRON) | DR. MONICA MISRA (CONVENOR) | PROF. SEEMA MAKHIJA (TEACHER IN CHARGE)

Student's Achievements

Achievements	URL
FEBRUARY 2021	
Rajkumar Jain (I year) secured second position in online quiz competition on FOOD AND NITRITION organised by NICHE (zoological society), ANDC.	https://www.instagram.com/p/CNHdtsWnqRZ/?igshid=YmMyMTA2M2Y=
MARCH 2022	
Women Volleyball team secured first position in FIT INDIA ANDC SPORTS TOURNAMENT 2021-22. Participants: II year - Preeti, Divya Yadav, Manshi, Khushi Vashishta, Khushi Aggarwal, Twishi and Ritika I year - Divya Pant, Jasmine Negi and Twinkle Khattar	https://docs.google.com/document/d/1GqoJ6YgkokBzd5IAamIoV8GfA1Z6UNpS/edit?amp;ouid=106983925661710286530&rtfpof=true&sd=true
Khushi Vashishtha (II year) secured second position in 100m race in FIT INDIA ANDC SPORTS TOURNAMENT 2021-22.	https://drive.google.com/file/d/1GR9kg-h1AUoMo5ZkOqu682ChjwUjxe7g/view

APRIL 2022	
Anshika Sharma (I year) secured first position in ARTICLE WRITING COMPETITION organised under Poshan Pakhwada by NSS, ANDC.	https://www.instagram.com/p/CcSI8BiBSG6/?igshid=NDdhMjNiZDg=
JUNE 2022	
Anshika Sharma (I year) secured first position in ARTICLE WRITING COMPETITION on the occasion of World Child Day Against Labour by NSS, ANDC.	https://www.instagram.com/p/CfR1_JDhrrf/?igshid=NDdhMjNiZDg=
SEPTEMBER 2022	
Anshika Sharma (II year) secured second position in HINDI MAHOTSAV'22 – HINKHOJ organised by Literary club, IIT BHU.	https://www.instagram.com/p/Ci7l2_QhdVf/?igshid=NDdhMjNiZDg= https://drive.google.com/file/d/1Goh4fkEJU_uBEcliQwAg_o9rckpQEEGI/view?usp=drivesdk
Harshita Kushwaha (II year) secured second position in MICRO QUIZ (college category) organised during Microspheres 2.0.	https://drive.google.com/file/d/17DduZikj8RUL5j3CqavHogVh_5GW9CbN/view
OCTOBER 2022	
Anshika Sharma (II year) and Sheelam Saroj (II year) won first prize in RANGOLI MAKING COMPETITION of Sahyog, Diwali mela organised by NSS, ANDC.	https://www.instagram.com/p/CkBpmQISiut/?igshid=NDdhMjNiZDg=

Student's Participation

Participation	URL
DECEMBER 2021	
Abhay Gupta (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://docs.google.com/document/d/19UtXcDxIInXLOWSXzehodyNSnaNXJg8p/edit?amp;ouid=106983925661710286530&amp;rtpof=true&amp;sd=trus
Harshita Kushwaha (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://drive.google.com/file/d/1Ai468rUP8anqHnsNa1C-evp2Wt4NckxU/view?amp;ouid
Basab Bhattacharjee (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://drive.google.com/file/d/1Dv7FCnsbb7Xa9CyJxp5GTxlT9Jt3vnls/view
JANUARY 2022	
Abhay Gupta (I year) participated in VIRTUAL LAB DEVELOPMEENT 1.0 organised by ANDC.	https://drive.google.com/file/d/19XmFXXNSz-otZWwsHeeZFEbY2PHgl43es/view

Harshita Kushwaha (I year) participated in VIRTUAL LAB DEVELOPMENT 1.0 organised by ANDC.	https://drive.google.com/file/d/19Z6enSjs_S2-vlyrtvvHsm2GbqackDGc/view?amp;
Basab Bhattacharjee (I year) participated in VIRTUAL LAB DEVELOPMENT 1.0 organised by ANDC.	https://drive.google.com/file/d/1DzMVSJfcDB3oZajgk6NQWhBVo_pGkMtu/view
Dhruv Bhasin (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://docs.google.com/document/d/19HvL6sYMVDApfJpszuosIqyiSbVpmpBj/edit?amp;oid=106983925661710286530&rtopf=true&sd=true
Abhay Gupta (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://docs.google.com/document/d/19UtXcDxIInXLOWsXzehodyNSnaNXJg8p/edit?amp;oid=106983925661710286530&rtopf=true&sd=true
Harshita Kushwaha (I year) participated in GENERAL QUIZ CUM DEBATE organised by Vedang (debating and quizzing society), Guru Nanak Dev Khalsa College.	---
Harshita Kushwaha (I year) participated in PAINTING COMPETITION organised by TARK, ANDC.	---

Harshita Kushwaha (I year) participated in NIBANDH LEKHAN organised by Kavyanjali (creative writing society), Rajdhani College.	---
FEBRUARY 2022	
Anshika Sharma (I year) participated and reached in Top 6 of ARTICLE WRITING COMPETITION organised by NICHE (zoological society), ANDC.	---
Anshika Sharma (I year) participated in K.C. GARG MEMORIAL NATIONAL CONVENTIONAL DEBATE organised by Literary Umbrella (literary society), Majaraja Agrasen Institute of Technology.	https://drive.google.com/file/d/17aQWt57jCDLfFsEomrkNYaUZpEFRL3w8/view
Harshita Kushwaha (I year) participated in research 'MENTAL HEALTH AND SUBSTANCE USE LITERACY AMONG COLLEGE GOING STUDENTS' conducted by Centre for Community Medicine, AIIMS, New Delhi.	https://drive.google.com/file/d/17fbAThVy6Oa7puT9ERvtkhvgmou7dbuY/view
Harshita Kushwaha (I year) participated in STAND UP AGAINST STREET HARASSMENT TRAINING PROGRAM.	https://drive.google.com/file/d/17oI2O_03RGjZno7mSGbyqMs3sCPPp-i1/view

Abhay Gupta (I year) attended the webinar on MENSTRUAL HYGIENE AND CERVICAL CANCER organised by Menstrual Café Rajguru, Shaheed Rajguru College of Applied Sciences for Women.	https://drive.google.com/file/d/19oTXSoTo9jeYFB8nOzACAGxKGUEwoile/view
Dhruv Bhasin (I year) attended the webinar on MENSTRUAL HYGIENE AND CERVICAL CANCER organised by Menstrual Café Rajguru, Shaheed Rajguru College of Applied Sciences for Women.	https://drive.google.com/file/d/191rQTXfcz6CZvq_XxE6CcljMqou1UH2/view?amp;ouid
Abhay Gupta (I year) participated in CANVA WORKSHOP organised by Bodhini AERC, ANDC.	https://drive.google.com/file/d/18xfvRSGZrZbLc_52PWgq_wL87Z8ZVPT/view?amp;ouid
Harshita Kushwaha (I year) participated and reached in the finals of QUIZ ON LOCKDOWN MEMORIES organised by Botanical Society, Deshbandhu College.	https://drive.google.com/file/d/1Aw47VGisGry6fl1UHhPehXf6ldgxnLjx/view
MARCH 2022	
Anshika Sharma (I year) participated in DEBATE COMPETITION organised by NICHE (zoological society), ANDC.	---
Harshita Kushwaha (I year) participated in DEBATE COMPETITION organised by NICHE (zoological society), ANDC.	---

Khushboo (I year) participated in DANCE PE TAAZ(SOLO) organized by Spandan x Metanoia, the National Management Fest of New Delhi Institute of Management.	https://drive.google.com/file/d/1Du-fW1MdZAD2gvLi86hmKnEXLat3SUM/view
APRIL 2022	
Anshika Sharma (I year) participated and reached in Top 6 of CLASSICAL SOLO DANCE COMPETITION organised under LEIOTHRIXX, ANDC.	---
MAY 2022	
Harshita Kushwaha (I year) participated in ONLINE QUIZ COMPETITION organised on International Biodiversity Day.	https://drive.google.com/file/d/1AjSeGGHiMoORO5Ex_OTMQ5jIAxo6Brh5/view
JUNE 2022	
Rajkumar Jain (II year) participated in V-LAB BOOTCAMP 2.0.	---
Harshita Kushwaha (I year) participated in V-LAB BOOTCAMP 2.0.	---
JULY 2022	

Rajkumar Jain (III year) participated in ONLINE SUMMER INTERNSHIP programme on Web Programming and Development organised by Tongmyong University, South Korea.	https://drive.google.com/file/d/18f1YIA1e4r-VxsJirNWqW8swQsqNF3cl/view?amp;ouid
AUGUST, 2022	
Abhay Gupta (I year) participated in NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION organised by Ministry of Commerce and Industry.	https://docs.google.com/document/d/19UtXcDxIInXLOWSXzehodyNSnaNXJg8p/edit?amp;ouid=106983925661710286530&amp;rtpof=true&amp;sd=trus
Anshika Sharma (I year) participated in ARTICLE WRITING COMPETITION organised in World Breastfeeding Week by NSS, Rajdhani College.	https://drive.google.com/file/d/18RbzGu5QvooMxp03QCleAlRTI7xYyyWO/view
SEPTEMBER 2022	
Anshika Sharma (II year) participated in HINDI MAHOTSAV'22 - RACHNAATMAK LEKHAN organised by Literary Club, IIT, BHU.	https://drive.google.com/file/d/1GejtTbn9dMs_WbFDPwHnJJ3Xiq8L9ozh/view
Anshika Sharma (II year) participated and reached in Top 25 of HINDI MAHOTSAV'22 - AASHUBHASHAN organised by Literary Club, IIT, BHU.	https://drive.google.com/file/d/1CZZtTmxCmL92sBoKoqMnVACMDXqW1Btj/view

Anshika Sharma (II year) participated and reached in Top 6 of HINDI MAHOTSAV'22 -KAHAANI VAACHAN organised by Literary Club, IIT, BHU.	https://drive.google.com/file/d/1G7XHCAnBmkVtJCI-k1V-Nfl4X7aD2CGO/view
Khushboo (II year) participated in DIPLOMA COURSE IN COMPUTER APPLICATION conducted by Saraswati Computer Center.	https://drive.google.com/file/d/17rDVNmBg3wjWSldlcbtXgtIQ5PcJuJYp/view
Abhay Gupta (II year) participated in MICROSPHERE 2.0.	https://drive.google.com/file/d/19W8YAvkqkinF6_zhPhmygpUmAyuo6SII/view
Anshika Sharma (II year) participated in MICROSPHERE 2.0.	https://drive.google.com/file/d/19aJy_oR5rzV76DfrTb9g9zoKg-NEHhJv/view?amp;ouid
OCTOBER 2022	
Harshita Kushwaha (II year) attended the WORKSHOP on Anti Microbial Resistance organised in ANDC.	---
Khushi Vashishtha (III year) participated in SOLO INDIAN SINGING COMPETITION organised by IIT Roorkee.	https://drive.google.com/file/d/1DSlkAAl_5dl4rdxzifi6iGIjNmRo8caX/view

NOVEMBER 2022	
Rajkumar Jain (III year) participated in 7 th INTERNATIONAL CONFERENCE of INSCR.	---
DECEMBER 2022	
Abhay Gupta (II year) participated in ONLINE QUIZ COMPETITION on theme International day for the Elimination of Violence against women organised by Sashakt (women empowerment society), ANDC.	https://drive.google.com/file/d/18vdcgoPgXolVmlGGe-noqeQ3SiyoQTVQ/view?amp;ouid
Harshita Kushwaha (II year) participated in ONLINE QUIZ COMPETITION on theme International day for the Elimination of Violence against women organised by Sashakt (women empowerment society), ANDC.	https://drive.google.com/file/d/1AZATLoc79GZfwQQQDLcGO-4sS_VgbHDn/view?amp;ouid
Harshita Kushwaha (II year) completed the RESEARCH METHODOLOGY COURSE on Tools and Techniques in Biological Sciences under Prime Minister Research Fellow in collaboration with Department of Biochemical Engineering and Biotechnology of IIT Delhi.	---

DEPARTMENTAL ACTIVITIES

ACHARYA NARENDRA DEV COLLEGE
(UNIVERSITY OF DELHI)
NAAC ACCREDITATION GRADE 'A' | NIRF 2020 ALL INDIA RANKING-18

NICHE-THE ZOOLOGICAL SOCIETY
Presents
ALUMNI TALK
On
'CRITICAL PERIOD- A WINDOW OF OPPORTUNITY FOR LEARNING'

SPEAKER
Dr. Vipendra Kumar
PhD
Post-doctoral research associate
Department of Molecular and Integrative
Physiology School of Molecular and Cellular Biology
University of Illinois Urbana-Champaign, Illinois, USA

FEBRUARY 10, 2021
WEDNESDAY 12PM
VENUE: SEMINAR HALL

DR. RAVI TOTEJA (OFFICIATING PRINCIPAL)
DR. MONICA MISRA (TEACHER IN CHARGE)
NICHE OFFICE BEARERS: SONI GUPTA, PAHAR, DIVYA

ACHARYA NARENDRA DEV COLLEGE
University of Delhi
NAAC ACCREDITATION GRADE 'A' | NIRF 2020 ALL INDIA RANKING 18

NICHE-THE ZOOLOGICAL SOCIETY
DEPARTMENT OF ZOOLOGY
Under the aegis of DBT STAR College Scheme
Presents
Intercollege
JUST-A-MINUTE
Competition

Cash prize for the winners!!!!
Date : 6th February ,2021
Day : Saturday
Venue: Google meet
Time : 3-5 pm

REGISTER HERE!

DR. RAVI TOTEJA
(OFFICIATING PRINCIPAL)

DR. MONICA MISRA
(TEACHER IN CHARGE)

FOR FURTHER DETAILS CONTACT
SONI GUPTA 8860220570
(PRESIDENT)

PARIKSHIT SAHOTRA (VICE PRESIDENT)
SAHIL KAUSHIK (SECRETARY)
RONAK (TREASURER)
DIVYA (JOINT SECRETARY)

Acharya Narendra Dev College
University of Delhi
presents

RBPT BASED
WORKSHOP
ON
BIOINFORMATICS
FOR UNDERGRADUATE STUDENTS
SPEAKER AND RESOURCE PERSON
FROM IITD

DATES: 9-13 JANUARY 2021

DR ANITA NARANG
DR SARITA KUMAR
TEACHER-IN-CHARGE

DR RAVI TOTEJA
PRINCIPAL

DR RASHMI SHARMA
DR SEEMA MAKHIJA
CONVENOR

[Link to register: https://forms.gle/1VkarRvsv7uCaVcs8](https://forms.gle/1VkarRvsv7uCaVcs8)

ACHARYA NARENDRA DEV COLLEGE
(UNIVERSITY OF DELHI)
NAAC ACCREDITATION GRADE 'A' | NIRF 2020 ALL INDIA RANKING-18

NICHE-THE ZOOLOGICAL SOCIETY
Under the aegis of DBT STAR College Scheme
Presents
TALK
On
PUBLIC HEALTH, WEALTH AND WELL-BEING

SPEAKER
Dr. Roopali Goyanka
Associate Professor, Deptt of Economics
Indraprastha College for Women
University of Delhi.

FEBRUARY 18, 2021
THURSDAY 5PM-6PM
VENUE: GOOGLE MEET

DR. MONICA MISRA (TEACHER IN CHARGE)
NICHE OFFICE BEARERS: SONI GUPTA, PARIKSHIT, RONAK, HARSHITA, ARYAMA

Acharya Narendra Dev College
University of Delhi
(All India NIRF 2020 Ranking-18, NAAC Score-3.31)
Under the aegis of DBT-STAR College Scheme

Hands-on Workshop on
ADVANCED
BIOINFORMATICS

Date: March 1-3, 2021

Schedule	Instructions
Day 1 (March 1, 2021) Talk on "A Step-by-Step Guide of Data Mining from Literature to Pathways." 5.30 to 6 P.M.	<ul style="list-style-type: none"> All participants must have their own computer/laptop Install R, R studio, pubmed.mineR in the sequence in your laptop For R: https://cran.r-project.org/ For R studio: https://studio.r-project.org/ For pubmed.mineR: install pubmed.mineR package from R or Rstudio console using the following command: install.packages("pubmed.mineR")
Day 2 and 3 (March 2-3, 2021) Hands-on Workshop on: • Extracting gene list using pubmed.mineR • Gene enrichment analysis • Functional interactive network • Biological interpretation using Gene cards and Uniprot 6.30 to 7 P.M.	

Dr Srinivasan Ramachandran
Senior Principal Scientist, CSIR-IGIB

Convenor
Dr Seema Makhija
Department of Zoology
Dr Archana Pandey
Department of Biomedical Science
Dr Rashmi Sharma
Department of Botany

Patron
Dr Ravi Toteja
Officiating Principal

April 6-19 2021 | Two-week national workshop (online)
Tools & Techniques in Statistical Analysis
under the aegis of DBT STAR College Scheme

Link for Registration: <https://forms.gle/J9URdrGbn4fhwoCA>

Chief Patron
Professor S. M. Anwar Alam
Chairman, Governing Body, ANDC

Chief Guest
Professor Balaram Pani
Dean of Colleges, University of Delhi

Patron
Dr Ravi Toteja
Officiating Principal
Co-Convenors
Dr Archana Pandey
Department of Biomedical Science
Dr Rashmi Sharma
Department of Botany

Convenors
Dr Vatsla Kohli
Department of Maths
Dr Seema Makhija
Department of Zoology
Dr K R Meena
Department of Maths

ACHARYA NARENDRA DEV COLLEGE
University of Delhi
ACCREDITED 'A' GRADE BY NAAC - Score 3.31
NIRF 2020 Ranking-18 | "Star College Status" by DBT
<https://www.andcollege.edu.ac.in/> | +91-(0)11-26294540

ACHARYA NARENDRA DEV COLLEGE
University of Delhi, New Delhi
(Under the Aegis of DBT-STAR College Scheme)

Presenting
ANDC Career Counselling Series
"Career after MBA - Exploring the Unexplored"

by

Harshit Arora
PGDM (Healthcare Management) GIM, Goa
Management Associate, ZS Associates

Yashmeet Kaur
Executive (Operations IPD), Moolchand Medical
MBA (Health and Hospital) Jamia Hamdard, Delhi

Mayuri Mathur
Knowledge Management, ZS Associates
MBA (Hospital Health Management) IIMHR, Jaipur

Date: March 20, 2021; Time: 07:30 pm to 09:00 pm
On Google Meet (<https://meet.google.com/ycs-uzay-ume>)

ACHARYA NARENDRA DEV COLLEGE
University of Delhi
(All India NIRF 2020 Ranking-15, NAAC Score-3.51)
Under the Aegis of DBT-STAR College Scheme

Presenting
ANDC Career Counselling Series
"Studying in Europe - Interaction with Seniors"

Aparna Shandheep
M.Sc. Biomedical Sciences- Infectious and tropical diseases, Belgium
PG Diploma in Forensic Science, University of Delhi
B.Sc. (Hons) Biomedical Science, ANDC, University of Delhi

Madan Khatriwada
Researcher at University of Antwerp, Belgium
M.Sc. in Leading International Vaccinology Education (Erasmus Mundus)
B.Sc. (Hons) Biomedical Science, ANDC, University of Delhi

Srishti Vajpayee
Ph.D. at University of Heidelberg, Germany and Cyanogen Srl, Italy
M.Sc. in Biomedical Science with specialisation in molecular life sciences from Radboud University, Netherlands
B.Sc. (Hons) Biomedical Science, ANDC, University of Delhi

Rahul Shaha
Int. PhD at International Max Planck research school, Germany
M.Sc. Biotechnology from IIT Bombay
B.Sc. (Hons) Biomedical Science, ANDC, University of Delhi

Shazeb Ahmad
PhD at GATC Laboratory at Helmholtz Institute for RNA based Infection Research
MSc in FOKUS Life Science from University of Würzburg, Germany
B.Sc. (Hons) Biomedical Science, ANDC, University of Delhi

Date: March 14, 2021; Time: 07:30 pm to 09:00 pm
On Google Meet (<https://meet.google.com/ycs-uzay-ume>)

ACHARYA NARENDRA DEV COLLEGE
University of Delhi
(All India NIRF 2020 Ranking-15, NAAC Score-3.51)
Under the Aegis of DBT-STAR College Scheme

Presenting
ANDC Career Counselling Series
"Career in Forensic Science"

Sweta
M.Sc. Forensic Science
Specialization in Forensic Chemistry and Toxicology (IITM)
National Institute of Criminology and Forensic Science (Ministry of India)

Maniki Mathur
DNA Technologist, Bode Technology Group Inc.
M.Sc. Forensic Molecular Biology, George Washington University, USA

Arti Varshney
Scientific Officer, Sherlock Institute Forensic Science, India
M.Sc. Forensic Science, Sam Higginbottom University of Agriculture, Technology and Sciences, India
Post Graduate Diploma in Forensic Science, SCOT Khalsa College, University of Delhi, India

Date: March 20, 2021; Time: 07:30 pm to 09:00 pm
On Google Meet (<https://meet.google.com/ujx-wony-bjg>)

International E-Conference of Scientists for Soil Contamination Research (INSCR)
Jointly with
Department of Zoology (DU), Acharya Narendra Dev College (DU), Kirori Mal College (DU), Sri Lal Upadhyaya College (DU), Gargi College (DU), Ramjas College (DU), Sri Aurobindo College (DU), Maitreyi College (DU), Ramjas College (DU), Sri Aurobindo College (DU), C.M.P. College (AU) & Phixgen Pvt. Ltd., Gurgaon

Workshop
"Genomics Analysis"
Genomics Analysis for Beginners
14th November

Protein Modelling
Sequencing Alignment & Phylogenetic Analysis
Genome Assembly & Annotations
Interactive Lecture Sessions

For more details & registration visit:
<http://econference.inscr.co.in/>

ACHARYA NARENDRA DEV COLLEGE
University of Delhi
Star College Status by DBT | NIRF All India Ranking 2020- 18

ANDC CARRER COUNSELLING SERIES
Under the aegis of DBT STAR COLLEGE SCHEME

CARRER IN INDIAN FOREST SERVICES: A SESSION WITH IFS OFFICERS

APRIL 18, 2021 | 07:00 p.m. to 09:00 p.m.
FOR REGISTRATION : <https://forms.gle/KC1h6SXDxpC8ouGK7>

SANDEEP TAMBE
PROFESSOR
IIFM, BHOPAL

S. ELAMURUGANNAN
DEPUTY DIRECTOR
FOREST SURVEY OF INDIA
SOUTHERN ZONE

BANUMATHI G.
DEPUTY SECRETARY
DBT, INDIA

KARTHIKEYANI
IFS, 2018 BATCH

KRISHNA DEVAN
IFS, 2018 BATCH

PATRON
DR RAVI TOTEJA
OFFICATING PRINCIPAL

CONVENORS
DR ARCHANA PANDEY
DEPARTMENT OF BIOMEDICAL SCIENCE

DR RASHMI SHARMA
DEPARTMENT OF BOTANY

DR SEEMA MAKHIJA
DEPARTMENT OF ZOOLOGY

ORGANIZING COMMITTEE
DEPARTMENT OF BIOMEDICAL SCIENCE
Dr. Satendra Singh
Dr. Rimpriy K Chowhan
Dr. Ritu Khosla
Dr. Deepshikha

DEPARTMENT OF BOTANY
Dr. Manoj Kr Singh
Dr. Sumit Sahni
Dr. Vineet Kr Singh

DEPARTMENT OF ZOOLOGY
Dr. Neelgagan Singh
Dr. Rahul Dev
Mr. Sanjay Kuma

STUDENT COORDINATORS
Pritika Kwatra
Bisakha Das
Sakshi Sharma
(Department of Biomedical Science)

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI
ACCREDITED 'A' GRADE BY NAAC
NIRF 2021 RANKING -20
Under the aegis of DBT STAR Scheme and IQAC

Department of Zoology
organizes a
Hands-on Training for Support Staff
on
Tools in Modern Biology

Date: April 21, 2022 Time: 11:00am-3:00pm

Microscope
Autoclave
Laminar Flow
VIS Spectroscopy

PATRON
Prof. Ravi Toteja

CONVENORS
Prof. Seema Makhija
Dr. Monica Misra

COORDINATORS
Dr. Rahul Dev
Dr. Neelgagan Singh
Dr. Ritu Khosla

Annual International Conference of Scientists for Soil Contamination Research (INSCR)
PROBES IN SUSTAINABLE DEVELOPMENT
NOVEMBER 15-18, 2021

In Association with

Darm Dapal Upadhyaya College, DU
Gargi College, DU
Kirori Mal College, DU
PG Department of Zoology, Magadh University

Ramjas College, DU
Sri Venkateswara College, DU
Department of Zoology, DU
C.M.P Degree College, University of Allahabad

Phixgen Pvt. Ltd, Gurgaon
College of Commerce, Arts and Science, Patna

For more details & registration visit:
<http://econference.inscr.co.in/Registration/index.php>
http://econference.inscr.co.in/images/About_the_Journal.pdf

Email us on: inscr2021conference@gmail.com | Contact us at: +91-1203679147
For more details: Click for Circular | Website: <http://econference.inscr.co.in/>

Government of India
Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
Office of the Controller General of Patents, Designs & Trademarks

under the aegis of
DBT STAR College Scheme | Internal Quality Assurance Cell (IQAC)
Acharya Narendra Dev College
presents a session on

IPR Awareness Programme
(Under National Intellectual Property Awareness Mission)
December 29, 2021 Time: 4:00 PM onwards

75 Azadi Ka Amrit Mahotsav

Creative India; Innovative India

Prof. Ravi Toteja
Principal, ANDC

Dr. Usha Rao
Assistant Controller of Patents and Designs, Intellectual Property Office, Delhi Ministry of Commerce

Prof. Seema Makhija
Departmental STAR College Coordinator

Prof. Sarita Kumar
Convener, IQAC

click for joining: <https://us02web.zoom.us/j/83919677497>

Indian Network for Soil Contamination Research (INSOCR)
in association with
Department of Zoology (DU), Acharya Narendra Dev College (DU),
Deen Dayal Upadhyaya College (DU), Gargi College (DU), Kirori Mal College (DU),
PG Department of Zoology (MU), Maitreyi College (DU), Ramjas College (DU),
Sri Venkateswara College (DU), C.M.P. College (AU) & PhiXgen Pvt. Ltd.

"Microbes in Sustainable Development"
15th November 2021

WORKSHOP
"Art of Scientific Writing and Communication"



Components of Manuscript
Where to begin and Where to end

Framing a rebuttal letter
Formulating a specific journal

Plagiarism

The art of scientific writing is essential for effective content development. The clarity of concept along with the precise use of words/phrases are required to communicate research with the scientific fraternity. This session aims to target the aspiring students and researchers from India to improve their scientific writing techniques by adhering to accurate expression and clarity of concept. The purpose of this workshop is to alleviate the mystique impact of art of scientific writing and communication.

For more details & registration visit:
reference.inscr.co.in/

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

DEPARTMENT OF ZOOLOGY

Presents
ARTICLE WRITING COMPETITION



CASH PRIZES

TOPICS:

SUNDAY, 6 FEBRUARY 2022
12:00PM
ON GOOGLE MEET
LINK:

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

NAAC Grade 'A' | NIRF Ranking 2021- #20 | DBT STAR College

organizing one-week online bootcamp for
V-Lab Development
under the aegis of DBT Star College Status

17- 22, January 2022
4:00 p.m. to 6:00 p.m. daily



Key Learnings
HTML concepts
Styling with CSS
Introduction to JavaScript

Professor Ravi Toteja
Patron


Dr Sanjeeta Rani
Dr Pooja Bhagat
Professor Seema Makhija
Convenors

Organizing Committee: Dr Rahul Dev, Mr Abhay Pratap Singh, Dr. Ayush Mishra, Vaibhav Thapliyal, Yash V

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

NAAC Grade 'A' | NIRF Ranking 2021 - 2022 | DBT STAR College

invites participation in
"ECOVILLE"
Igniting Young Minds
an outreach program for school students
on February 27, 2022



Temporary Environmental Approaches

Sponsors
Azadi Ka Amrit Mahotsav

Registration at: <https://icmc22/index>

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

NAAC Grade 'A' | NIRF 2022 Ranking-18 | DBT STAR Status College

DBT STAR College Scheme | Internal Quality Assurance Cell (IQAC)

In association with
Rajiv Gandhi National Institute of Intellectual Property Management (RGNIPM)
Government of India, Nagpur
(Under the National Intellectual Property Awareness Mission)

Online Workshop on Intellectual Property Rights (IPR), Patents and Designs

Speaker
Kumar Raju
Asst. Controller of Patents & Designs, IPO Mumbai/RGNIPM

2022, Saturday | 01:00 p.m. to 02:00 p.m.

Click here to Register
Prof. Ravi Toteja
Patron

Click here to Join Webinar
will be provided to all participants

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

NAAC ACCREDITATION GRADE 'A' - SCORE 3.21 (NIRF) - 2021 ALL INDIA RANKING

NICHE- THE ZOOLOGICAL
Presents
Intercollege DEBATING COMPETITION

topic
This house believes that
Mental health is more important than physical health

Registration Link:
<https://forms.gle/rzpPj7wWPrUX3DaM6>

DATE: 3rd March 2022
TIME: 10:30AM
Venue: Seminar Hall

PRINCIPAL
Dr. Ravi Toteja

TIC
Dr. Monica Misra


PRESIDENT
Sahil Kaushik

ACHARYA NARENDRA DEV COLLEGE
UNIVERSITY OF DELHI

NAAC Grade 'A' | NIRF Ranking 2021 - #20 | DBT STAR College

celebrates Science Week with

International E-Conference on Igniting Contemporary Environmental issues Sustainable Approaches [ICMCESA - 2022]
January 22 - 28, 2022
under the aegis of DBT STAR College scheme and IQAC



Registration at: <https://icmc22/index>
Conference Booklet: <https://icmc22/index>
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In association with
Rajiv Gandhi National Institute of Intellectual Property Management (RGNIPM)
Government of India, Nagpur
(Under the National Intellectual Property Awareness Mission)

Online Workshop on Intellectual Property Rights (IPR), Patents and Designs

Speaker
Kumar Raju
Asst. Controller of Patents & Designs, IPO Mumbai/RGNIPM

2022, Saturday | 01:00 p.m. to 02:00 p.m.

Click here to Register
Prof. Ravi Toteja
Patron

Click here to Join Webinar
will be provided to all participants

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organizing one-week online bootcamp for
V-Lab Development
under the aegis of DBT Star College Status

17- 22, January 2022
4:00 p.m. to 6:00 p.m. daily



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MICROSPHERE 2.0

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17th September, 2022

AN INITIATIVE TO PROMOTE MICROBIAL LITERACY & CELEBRATING THE DIVERSITY & WIDE APPLICATIONS OF MICROBES

In association with
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FEDERATION OF EUROPEAN MICROBIOLOGICAL SOCIETIES (FEMS)
&
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Jointly organized by
Deen Dayal Upadhyaya College (DU), Gargi College (DU), Kirori Mal College (DU), Ramjas College (DU), Shivalaji College (DU), Acharya Narendra Dev College (DU), PG Dept. of Zoology (MU) & SGTB Khalsa College (DU)

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Department of Zoology



III Year

II Year



I Year

Answers

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

1. Oxytocin
2. Robert Brown
3. Nerve cord
4. COVAXIN
5. Appendix
6. Genome
7. Echidnas/ Platypus
8. Neopilina
9. Planktons
10. Ramdeo Misra
11. Kaziranga



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