



Dept. of Zoology, Cooch Behar Panchanan Barma University  
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Dr. Debkumar Mukhopadhyay  
Honorable Vice Chancellor, CBPBU

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Includes sharing of experiences by our research scholars and students about several conferences, workshops, study tour and other Departmental and University events that they have participated in.

### Editorial Board

Editor: Dr. Hadida Yasmin: [hadiday77@gmail.com](mailto:hadiday77@gmail.com)  
Co-Editor: Sanskriti Rai: [hgsans73@gmail.com](mailto:hgsans73@gmail.com)

### HELPING HANDS DURING COVID-19 CRISIS

- 3 Students appointed as Molecular Biologist in different laboratories for RT-PCR based COVID-19 testing
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- Lending RT-PCR machine (temporary basis) for COVID-19 testing



Black headed oriol feeding its infant  
(Photo courtesy : Ripan Das)

# Photo Gallery

Photo Courtesy : Ripan Das (1 & 5); Soumyadeep Sarkar (2); Sourav Sha (4 & 7); Hadida Yasmin (3, 6, 8, & 9)



(1) Crimson Sunbird (2) Great Mormon (3) Peacock Pansy (4) Collared Falconet (5) Pheasant Tail Jacana (6) Open Bill Stork (7) Yellow Footed Green Pigeon (8) Red Vented Bulbul (9) Asian Koyel Female

## Message from the Vice Chancellor's Desk

I am delighted to know that the Department of Zoology, a constituent faculty of Cooch Behar Panchanan Barma University, is publishing “PRANIE” second volume of the Departmental Newsletter.

The newsletter is a wonderful amalgamation of the thoughts of our students in the form of articles on contemporary science, reports on departmental activities and creative writing in the form of poems. This will greatly help to inculcate a scientific temperament and provide a pleasant learning experience for all. I congratulate the entire team of the Department of Zoology on the release of *PRANIE* the annual departmental newsletter. *PRANIE* exemplifies the potential and the literary skills of our students.

I also take this opportunity to express my gratitude to both the renowned scientists Prof. Syamal Roy, our former Vice Chancellor and Prof. Uday Kishore whose contributions have added a significantly great value to this Newsletter.

Our University has vigorously worked on giving its budding talents a new path and attitude in order to make them capable of facing the real world challenges. Hope this Newsletter reaches to all the scientifically motivated scholars.

My best wishes and good luck to everyone.



**Dr. Debkumar Mukhopadhyay**  
Vice Chancellor, CBPBU



# Rendezvous with Prof. Uday Kishore



Dr Uday Kishore is a teacher and a scientist with special interest in innate immunity. He was the Founder Director of the Centre for Infection, Immunity and Disease Mechanisms, Brunel University London. He earned his BSc Honours in Zoology from S. P. Jain College, Sasaram, Bihar; MSc in Zoology from Hindu College, Delhi; and PhD from the Department of Zoology, University of Delhi and CSIR Institute of Genomics and Integrative Biology, Delhi, India. After spending a year at the Salk Institute for Biological Studies, La Jolla, California as a NASA Fellow, he moved to the University of Oxford for the most part of his post-doctoral training, first at the Medical Research Council (MRC) Immunochemistry Unit, Department of Biochemistry and then at the Weatherall Institute of Molecular Medicine, John Radcliffe Hospital. His previous positions include NASA Fellow, Wellcome Trust International Fellow and Alexander Humboldt Fellow. He is also the recipient of MRC Investigator Prize, European Commission Young Scientist Prize, and Mother Teresa Excellence Award. Dr Kishore has several adjunct and professorial positions internationally.

Dr Kishore has authored over 150 peer-reviewed research papers, 40 book chapters, 6 international patents, and edited 10 books. His research team is currently trying to understand how the innate immune components deal with self, non-self and altered self. Mostly revolving around complement proteins and C-type lectins, (1) his team examines their importance in host-pathogen interaction using HIV-1, Influenza A virus, SARS-CoV-2, *Mycobacterium tuberculosis* and *Aspergillus fumigatus* as model pathogens; (2) his group is also trying to ascertain their role as immune surveillance molecules in allergy; cancer (pancreatic, breast and ovarian cancers; leukaemia, glioblastoma, and mesothelioma); and human pregnancy; and (3) his research group is also devising drug delivery strategies in allergy and cancer through nanoparticles.

## Sanskriti Rai recently caught up with Dr Kishore. Her questions were :

### □ How was your early life? Where did you start your academic journey?

- I grew up in a small town in the state of Bihar, called Sasaram. It is well known as the birthplace of Sher Shah Suri who once defeated Mughals and ruled India for 5 years until he died. I attended primary and high schools, and then went to SP Jain College locally. Our routine life was easy, uncomplicated and fun, without modern day pressure of being successful almost on a daily basis. So, we studied what and when we liked, we played, we sang, and clearly wasted a lot of time!

### □ Who are your mentors who inspired you?

- I was always fond of talking to my teachers and seniors until I bored them to despair, or I was asked to meet again (basically, 'go away now!'). My elder brother, Dr Vijay K Singh, was my first passive mentor. I was in school when he was doing medicine (MBBS) and also researching in cardiology. During holidays, when he would come home, I used to carry his rather muscular medical books wherever he went. Little did I know then that one day I shall be writing chapters for these shiny books with silky pages, including that for the awesome Gray's Anatomy. I met Prof Rewati Raman Sinha during college days who was a very encouraging and caring teacher. In Delhi University, I met Prof K Muralidhar, who taught me Biochemistry and Immunology through BSc and MSc days. He also ended up becoming my PhD supervisor. I suppose he had no choice: I have been threatening Dr. Muralidhar about joining him for PhD since my BSc days! I learnt from him the art of being an honest and compassionate teacher: I have tried to model my teaching mostly on his style, and partly on Prof Abul Abbas (a well-known American immunologist and a gifted teacher from Patna, Bihar). At the Salk, I looked up to Francis (Crick) and Leslie (Orgel) who were legends of biology; at Oxford, Ken (Reid) and Bob (Sim), two renowned complementologists, were my true mentors. I was very fortunate that I got to work with famous and successful people: a great opportunity for self-reflection and introspection. There is one common thread between all my mentors: they were all very humble human beings!

### □ How did you get interested in research? What attracted you to this cause?

- My elder brother was a clinician and a scientist. Even as a school boy, I used to admire his single-authored publications in

electrocardiology in high profile international journals. I was overwhelmed with emotions when I heard that he was collaborating with Prof Abdus Salam, a Nobel Prize winner in Physics, in order to explain certain aspects of abnormal heart beats (called concealed conductions). In Delhi, he used to work with Prof AS Paintal, a renowned sensory physiologist, and a family friend. In the Patel Chest Institute, Delhi, I was in the company of many of his friends and juniors: they were all open to talking about what they were working on. Then, I took up a part-time Research Asstt job after BSc (at CSIR Centre for Biochemicals, now called Institute of Genomics and Integrative Biology; IGIB), where I used to purify restriction endonucleases and ligases under the watchful supervision of a young and rather ambitious scientist (Dr GS Khatri). My part-time job and the microenvironment around me ensured that I took up research as a career.

❑ **How did you set about in your research journey? What competitive exams did you qualify?**

- I think I passed this national test conducted by CSIR-UGC in the second year of MSc: I was pleasantly surprised since I did not prepare at all for the exam! Then I swiftly registered for a joint PhD degree between Department of Zoology, Delhi University and CSIR Institute of Genomics and Integrative Biology: returning back to IGIB was like homecoming for me! I worked on constructing synthetic genes for human epidermal growth factor (EGF), insulin and beta subunit of chorionic gonadotropic hormone, and expressing them in *E. coli*. In addition, I also worked on bacterial DNA replication as a sideshow. I was nicknamed 'Octopus' since I used to work on several projects in parallel, simply because I was the only PhD student in the laboratory for a couple of years. Apparently, recombinant EGF was the first few therapeutically relevant human proteins made within India and we earned plenty of kudos from all quarters (TV interview, Parliamentary presentation, and 'well done' remarks from the power-to-be). Although I was allegedly doing very well, I quickly realised that carrying on with commercial projects will not be rewarding in terms of publications and the scholarship that inspired me. In the last part of PhD, I accidentally went to Oxford for a Protein Engineering conference and got to interact with pioneers such as Greg Winter, Tom Blundell and Ian Campbell. Next, I wanted to stay in Oxford. After the conference, I was roaming around in the Science area and fortuitously bumped into Ken Reid uninvited, who offered me a year's position to work on complement and collectins. I realised that my naïve power of persuasion could work even overseas! That time, I did not know that Ken's laboratory was a piece of history: Rodney Porter solved the antibody (IgG) structure here (for which he got Nobel prize); a number of complement proteins and genes were first reported and many seminal discoveries on complement pathway activation were cracked here. I guess I was just lucky! Good on my mum's time spent in temples!

❑ **Were there any turning points in your life? What are the biggest challenges you have faced in your years?**

- We grew up as a family with very limited money. To be financially independent/sufficient, and at the same time, being uncompromising on values and aesthetics you set for yourself, is never easy. However, this combination (of being low on money and high on values) also imposes self-discipline and self-motivation. Another issue is that once you are a chronic immigrant (the day you leave your home), you have to deal with prejudices and stereotypes: accent, manners, and cultural values. Looking back, most such things look so trivial and unimportant. Nothing succeeds like success! I now feel sympathetic about people who offer resistance and difficulties. I have always tried to deal with adversities through my sense of humour, and by not forgetting where it all started, how far I have travelled, and that nothing is permanent! So, I respect and welcome challenges as my life experience.

❑ **Your international venture began as a NASA fellow at the Salk Institute, a pioneering and independent institute in La Jolla, California, USA founded by Jonas Salk himself; how would you describe your time and work there?**

- I had just submitted my PhD thesis and was preparing for that long and anxious wait for the viva date. I was also bit nervous since my thesis examiners were Prof G Padmabhan from Bangalore and Prof Amar Bhaduri from Calcutta, both seasoned and meticulous biochemists. To escape this agony, I applied for this NASA fellowship via the journal, Science. I was one of the four NASA Planetary Biology Fellows that year. I became even more excited when Prof Leslie Orgel agreed to host me at the Salk Institute. Francis Crick, Jim Watson, Leslie Orgel and Alexander Rick belong to the Cambridge RNA Club. While leaving from Oxford, I had one airbag full of Crick's most recent book (The Astonishing Hypothesis) that was given by friends and colleagues for his autograph! I felt like being a celebrity myself!! It was not a great start at the Salk though. Prof Jonas Salk, the polio vaccine pioneer, died the day I joined the Institute. Francis took over hesitantly since he was unwell as well. I worked on template-independent DNA replication using peptide-nucleic acid (PNA) in collaboration with Peter Nielsen from Denmark, who was later awarded Nobel Prize for the PNA technology.

❑ **You have also been a senior researcher at the University of Oxford since late 1990s, what can you tell us about your research chronicle through the years at one of the Ivy-league, and oldest university in the English-speaking world, and the world's second-oldest university which is still in continuous operation?**

- With Oxford, it was love at first sight! The town and the University offer a mesmerising sense of history, charm and tranquillity. No wonder I have lived in Oxford for nearly 25 years and I cannot complain except the infamous English weather that reminds me of the Monday mood of our PE teacher from school days. One of my memorable conversations I remember vividly in my first week at Oxford is of mentioning to my colleague on the 7<sup>th</sup> floor of Hans Krebs Building (Hans deciphered Krebs's cycle here), boasting how good India's AS Paintal is, 'he is in fact an FRS'. My coffee mate quipped: you better be careful; here in Biochemistry Oxford, only you and me are not FRSs, rest everyone is!

I actually came to Oxford more permanently via a Wellcome Trust International Fellowship as a crystallographer. However, that project did not get very far. Subsequently, Ken Reid lured me back to his MRC Immunochemistry Unit. After 3 years, I moved to Weatherall Institute of Molecular Medicine and got involved in understanding autoimmune mechanisms using

Myasthenia gravis as a disease model (some famous myasthenics are Michael Jackson and Amitabh Bachchan). That is where I decided to channel my basic immunology concepts to translational research: work that could lead to the development of immunotherapy.

❑ **Your lab has contributed a lot in the field of innate Immunity, especially in the area of Complement biology and Surfactant Proteins. Can you let us know about your important contributions to this field?**

- 'Art is me; Science is we'. I have not achieved all on my own. Most of the work reflects the hard work of hundreds of PhD students, post-doctoral scientists, colleagues, visitors, interns and collaborators.

Understanding the modular nature of complement proteins such as C1q, factor H and properdin opened up several new directions, so was identifying C1q and tumour necrosis factor superfamily. Our work on finding out roles of surfactant protein D in allergy and cancer is finally knocking on the door of clinical trials.

❑ **You already have a great list of publications, over 200: research papers, book chapters, International patents, and books. What are your future plans?**

- 'One way to make God laugh is to tell Almighty your future plans'. After a certain stage, the number of papers etc really do not assume such great importance. Working religiously and making progress are important. Coming from a small town, my realities of life have been better than my dreams. As a teacher, I am trying to reach out to remotest parts of the world that are less blessed. It is important to ignite the power of education and knowledge. This quest has a long-term vision.

❑ **You are also on the editorial board of several journals. We have heard about the stringent reviewing procedure before a research paper is accepted in a journal. What key points do you enumerate here for our research scholars?**

- There are plenty of clues in already published articles. The manuscript should have a clear message, innovation and creativity, and not mere collection of data and figures. There should be a clear theme in the manuscript and it should be backed up by robust data using modern techniques. That is why participating in journal clubs are so important: you dissect good and not-so-good things in a paper so that you do not make the same mistakes. When you are a PhD scholar, generating good data is only half the battle. How you analyse the data, how you put it in the context of existing literature, how well you write it and make a strong argument for your conclusions are equally important. It is important that as a research student, you spend considerable amount of time reading, writing, discussing and presenting. Simply coming to the lab everyday and setting up endless experiments is not good enough.

❑ **Is there an achievement or contribution that you are most proud of? What inspires you to keep going?**

- Mentorship is very close to my heart. It is a matter of great satisfaction that I have been able to mentor hundreds of students and scientists at all levels in their careers, all over the world.

To enjoy all aspects of my duties and responsibilities has become a habit. I always try to remain happy and optimistic. Being at peace with my conscience also keeps me going.

❑ **You left India for good almost 25 years ago. Looking back, how do you see the country in general, and also in terms of biological research?**

- India has changed enormously. The middle-class is thriving. At the same time, there is enormous poverty elsewhere. The quality of research in well-known places has gone several notches up. I receive a number of PhD theses and manuscripts from India every year to examine and review; there is a sea change in the standard compared to our time. The main concern remains about research within Universities, especially at the state level: availability of logistics and reagents, or rather delay in acquiring minimal structure for research seems hard work. In spite of these shortcomings, education remains country's lifestyle. India is blessed with highly motivated parents and teachers! So, future is great. There is really no great need to see your reflection via the mirror in the West all the time. Despite the challenging circumstances and social dynamics, India remains an intellectual force; Indians are well respected all over the world for their spiritual, intellectual and cultural profoundness. There is something worthwhile about our education, training and motivation.

❑ **What is your message for budding scientists?**

- Please keep things simple in life; do not overcomplicate.

Please don't take yourself too seriously when interacting with fellow human beings: there is always someone better than you.

Life is not all about being successful- full of recognition and cash; it is also about happiness and knowledge. So, when it comes to spreading these two, be infectious! Spread it like Coronavirus.

Things will change; do not give up. Be in the middle of the cricket pitch; then only you can score runs. So, don't get yourself run-out.

Remember, not everyone is naturally gifted or blessed with immense talent and intelligence. If you are blessed, please carry lesser mortals with you. Please help them improve and get better. If you have this habit since University days, you won't be fighting for authorship, cutting corners for funding, and campaigning for prizes and awards, later in life. Most importantly, you won't be lonely despite all your success!

Further details about Prof Kishore can be found here:

<https://www.facebook.com/Dr-Uday-Kishore-PhD-115926735093483/>

[https://www.researchgate.net/profile/Uday\\_Kishore](https://www.researchgate.net/profile/Uday_Kishore)

[https://scholar.google.com/citations?user=Tw1\\_PkcAAAAJ&hl=en](https://scholar.google.com/citations?user=Tw1_PkcAAAAJ&hl=en)

<https://loop.frontiersin.org/people/24906/overview>

# “Paradise Lost” to “Paradise Regained” — a long haul to know many unknowns about Covid-19

— by Prof. Syamal Roy

Prof. Syamal Roy earned his PhD in Biochemistry, University of Calcutta and did his post-doctoral studies at the Massachusetts Institute of Technology during 1984-1989. He joined CSIR-Indian Institute of Chemical Biology in 1990 and continued his research on the Immunobiology of Leishmaniasis. He is the Fellow of Indian Academy of Sciences (FASc.), Fellow of National Academy of Sciences (FNASc.) and also Fellow of Indian National Science Academy (FNA). He is the member of all the National Academies in India and recipient of J.C. Bose Fellowship of the Department of Science & Technology, Govt. of India. He is the former Vice Chancellor, Cooch Behar Panchanan Barma University and presently Professor and Dean, National Institute of Pharmaceutical Education and Research (NIPER), Kolkata.



Prof. Roy has made substantial contribution in the immunoprophylactic and immunotherapeutic approach against Leishmaniasis. His research outcomes while working with antimony resistant glycans present on *L. donovani* suggests that studies on drug resistance should not only focus on the parasite but also explore its direct interface, the macrophage. He currently continues to work in the same area.

## An Unknown enemy

'Paradise lost' – the epic poem of the 17<sup>th</sup> century written by English Poet John Milton. It's a story of fallen angel and loss of innocence of 'Adam and Eve' under the influence of Satan and their expulsion from the Garden of Eden. In the book of Genesis, God decrees them to suffer from diseases. We are being enveloped in darkness of several extraordinary epidemics like plague, small pox, yellow fever, cholera, tuberculosis and flu from time to time. Germ theory established by the two giants 'microbe hunters' like Louis Pasteur and Robert Koch has changed our views about pathogens. The corona virus (SARS-Cov2, causing the disease, Covid-19) in the form of Satan pushed us in a new darkness as in William Blake's poem "Sick Rose" arresting our image of a rose affected by disease. Very little is known about this new faceless enemy and our knowledge is beset with uncertainties and unknowns and demands in depth studies.

## Life before and after Covid-19

Covid-19 altered us in strange way. It is a paradigm shifting event that divides life into a before and after. We do not know where we are in this drama. Is this the first wave or it is a deadlier one waiting for us in the horizon? A pulse of anxiety is quite palpable in our mental landscape in the present scenario. Artists, clinicians, film makers, writers and painters are expressing their inner anxiety through creative enterprises. Great scientist, physician, Louis Thomas, President, Memorial-Sloan Kettering Cancer Centre, New York, expressed his enduring image of inner feeling of sadness in his book "**Late Night Thoughts on Listening to Mahler's Ninth Symphony**" with great gentleness and remains startlingly relevant for today's world. I recall watching the mural of Swedish painter Albertus Pictor applied to the white walls of Täby Church north of Stockholm and the movie, 'Seventh Seal' by the legendary Swedish film director, Ingmar Bergman where the Knight while walking through the plague ridden Mediaeval Sweden, encounters the "Character of Death". The "Death" invited the Knight to play chess knowing well that he only delaying inevitable. In Edgar Allan Poe's short story "The Masque of the Red Death", the Prince Prospero was unable to protect his guests from red death even in a walled abbey. Sudden spread of Covid-19 pandemics at an accelerated pace evokes the sensation of facing a giant wave of anguish sitting in a row boat in a raging sea, like in Hokusai woodcraft painting of Japanese art. Our fate is dependent on the vagaries of the nature.

## Paradise lost- a satanic influence of new virus on our immune system

The "[Book of Revelation](#)" describes a war in heaven parallels as microbes wage war against host. The microbes have all the

attributes of Satan. The role of “Satan” as pathogens seeking to destroy the paradise of human health. Our immune system- a holy trinity of three distinct cells, macrophages or phagocytes, T-lymphocytes and B-lymphocytes protects us against pathogens. At the later part of 19<sup>th</sup> century, Ilya Metchnikoff discovered phagocytic cells or macrophage and established their role in immunity. Macrophages attained a prominent place in George Bernard Shaw's play, “Doctor's Dilemma”. Shaw through his friend, famous bacteriologist of Guy's Hospital, London, Sir Almroth Wright came to know about phagocytes and its role in protecting us. He wrote in his book that “---only one genuinely scientific treatment for all diseases, and that to stimulate phagocytes”. I think Shaw's idea was well ahead of his time in the light of today's science. Phagocytes controls innate immunity-whereas T & B-lymphocytes dictate adaptive immunity. The new virus is armed with all the attributes of Satan to destroy our immune system. It is believed this new virus destroys T-lymphocytes of the Covid-19 patients and stimulates phagocytic cells to produce cytokines overtly.

### **Pathogen shaped the evolution of immune system and survival advantage**

Though the opera “Carmen”, by French composer Georges Bizet introduced Roma or Romani or Gypsies. They were originally from northern India (may have origins from Marwar region of Rajasthan), migrated to Europe more than thousand years ago. They are famous for Flamenco -a highly technical *dance* style requires skill. The researchers stumbled on an unusual immunological discovery. The Roma and European Romanians, were both exposed to the Black Death. Researchers looked for similarities in the DNA of Roma people and European Romanians that were also different from markers in the DNA of northern Indians, who did not face the Black Death. A cluster of genes in Roma and Romanians code for toll-like receptors proteins that are critical for defending the immune system were not found in north Indians, so natural selection must have favoured them in order for them to have survived in Europe after the Black Death. In another case, genetic differences that evolved to protect against past pandemics are still present at high frequencies in populations. The instance of this is deletion in the gene encoding the chemokine (family of proteins characterized by their ability to attract nearby cells) receptor CCR5, proposed to confer resistance to plague and small pox in Europe. It is important to study how the effect of such deletion, if any, on Covid-19 pathogenesis. In addition, one class of cell surface proteins of macrophages known as major histocompatibility gene (MHC) products play a critical role in resistance. Black rat populations of the central highlands of Madagascar are highly resistant to plague, whereas those from areas in which the disease is absent (low altitude) are susceptible which was attributed to cell surface protein and their variation known as polymorphism. MHC polymorphism may offer survival advantage for the species as a whole, where individual member may be susceptible. Humanity has so far survived every microbe through the evolution of immune system, and we will survive this one too. It will be of great interest to study how above genetic attributes in population can influence the outcome of Covid-19 infection?

### **Concept of “herd immunity” and can it stop subsequent infection?**

During the Peloponnesian War, the plague killed nearly one-third of the Athenian population in 430BC. One of the important persons, the great philosopher Socrates who survived the epidemic said to have tended unscathed to the sick and dying. Socrates had evidently acquired immunity from his earlier exposure to the disease, just as Thucydides himself. Immune memory was first documented in ancient Greece by the historian Thucydides who noted that "the same man was never attacked twice". This was an astute observation, and probably the first to recognize the importance of immune memory. These cells are important to protect us from subsequent attacks. In the modern science, this is the most important area of vaccine research. There are basically three ways to stop the Covid-19 infection. One involves restrictions on movement and the second is [a vaccine](#), but it still needs to be developed. A third is just waiting until enough people get it. Vaccines create 'herd immunity' through memory cell, that's how smallpox was eradicated. We do not know 'memory cells' status in the recovered Covid-19 patients. Such 'memory cells' are prerequisite for vaccine success.

### **Cloud in the horizon**

Oddly enough, 15-20% of covid-19 patients show aggressive immune enhancement coupled with cytokine storm. Cytokines- a class of proteins molecules produced by immune cells, are of two kinds: the one increases the inflammation known as pro-inflammatory variety and the other does the opposite known as anti-inflammatory. Excess of pro-inflammatory cytokines do more harm than good causing multi-organ failure. Guarding against immune enhancement is one of the biggest challenges. Immunologists define the molecules that cause immune enhancement as “Superantigens”. Presence of “Superantigens” in SARS-Cov2 is an open question. Covid-19 patients show spectrum of response. Chinese patients with mild symptoms, 70 percent developed strong antibody, but about 25 percent developed a low response and about 5 percent developed no detectable response. Mild illness, in other words, might not always build up protection. One important question is what would happen if we vaccinate people those who have pre-existing propensity of immune enhancement. There is another concern that a subset of recovered patients come down with disease. It is unclear if this is reinfection or activation of latent infection.

### **Covid-19 vaccine**

Development of an effective vaccine for COVID-19 to the control of the pandemic is of prime importance. But the road to get one is lengthy and bumpy. Currently such vaccine is not available. Vaccine researchers always they try to find out “the correlates of protection” from natural infection which is a key to vaccine development. Unfortunately, we do not know what are the “correlates of protection” against Covid-19 infection. The virus causing the disease is a RNA viruses more prone to mutations which



compounds the problem further in vaccine development. Mere presence of antibody against virus never tells us that we are protected, all it tells us that we are exposed to the virus. It remains to be seen if protection is mediated through cellular armor antibody or combination of both. Now there is a race to develop vaccine for Covid-19. There are many players in this endeavour. Most of the groups are using spike protein of the virus as antigen. Oxford University group is using chimpanzee virus as the carrier of spike protein nucleic acid. Other groups like, Moderna, US mRNA-giant and German giant, BioNTech teamed with Pfizer using mRNA to induce immune response against spike protein. The entire world is waiting to see success of such initiatives.

### Paradise to regain through vaccination

“Paradise regained” is another poem by Milton is the idea of reversals. Milton sets out to reverse the "loss" of Paradise. To regain the paradise lot more needs to be done. At the moment we are fighting with a shadow. So far, the virus isn't well understood and we do not know who is most vulnerable and why? May be through appropriate scientific research, new vaccines and new drugs will help to regain the Paradise. History can guide us towards adopting precautions, remind us that accurate observation on epidemiology. New light on the host-pathogen interaction, biology of virus and immune parameters is vital for a better understanding of the disease process. New tools like early diagnosis, vaccines and drugs will offer good handle to overcome the original sin and to build up a new Eden in our planet. Let us endure agonies together at the moment and meanwhile listen to Beethoven's 9<sup>th</sup> symphony to push our vigour, vitality and hope to a new height.

## Science Feeds

### Conversion of A-type blood to Universal O-type blood by an Enzymatic pathway in Human Gut Microbiome

Tamanna Najnin

MSc. Student (Batch- 2019-2020)

Access to the efficient enzymes that can convert A and B type red blood cells to 'universal' donor O, would greatly increase the supply of blood for transfusions. Accordingly, a good supply of group O RBCs is needed in blood banks if the patient's blood type is unknown or unclear, or when supply is limited. The human gut microbiome is a good source since the A and B antigen structures are present within the mucins that line the gut wall serve as a barrier to the invasion of gut bacteria. Consequently, some of these bacteria should express glycosidases that cleave the A and B antigens. Fosmid N08, from the obligate anaerobe *Flavonifractor plautii*, contains three ORFs (open reading frames): CBM32, GH36 and a GH4. Thin-layer chromatography (TLC) analysis of reaction mixtures with the individual enzymes revealed that FpCBM32 catalysed the conversion of A antigen to a more polar but still ultraviolet-active product, while subsequent addition of FpGH36 released galactosamine, along with H antigen trisaccharide. High-performance anion exchange chromatography with pulsed amperometric detection (HPAE-PAD) showed that treatment of A antigen with both enzymes released galactosamine, while the individual enzymes did not. These two enzymes are henceforth referred to as FpGalNAc deacetylase (FpGalNAcDeAc) and FpGalactosaminidase (FpGalNase). When the mixture of the two was employed, galactosamine was clearly released from type A+ RBCs but no sugar was released from B+ or O+, consistent with their high specificity towards only the A antigen. However, incubation with FpGalNAcDeAc alone removed A antigenicity. To assess whether conversion of A type RBCs by the enzyme pair was complete, it is probed for the formation of the H antigens that should be present on enzyme-converted O type RBCs.

Rahfeld et.al.2019, An enzymatic pathway in the human gut microbiome that converts A to universal O type blood, <https://doi.org/10.1038/s41564-019-0469-7>

## Jungle Babbler (*Turdoides striata*)-A Foster parent

Ripan Das

MSc. Student ( Batch- 2019-2020)

Birds are warm-blooded vertebrate of the class Aves, having a body covered with feathers, forelimbs modified into wings, scaly legs, bearing a beak without teeth and are oviparous. In India about 1347 species of birds are recorded, among them 78 species are endemic. Jungle Babbler is a common resident breeding bird and distributed all over the Indian subcontinent. They belong to the order Passeriformes, and order Leiothrichidae. They are very familiar birds and are gregarious that forage in small groups of six to seven birds, a habit that has given them the popular name of “Seven Sisters” or “Saathbhai” in Bengal. Their habitat is forest and are



also common resident breeding birds. They are known to gather and mob potential predators like snake. They are very noisy birds, and the presence of a flock may generally be known at some distance by the harsh chewing calls. They breed throughout the year. The nest is built halfway in a tree, concealed in dense masses of foliage. The normal clutch is three to four deep greenish blue eggs.

Parasitic birds often lay their eggs in other species' nests, relying on the foster parents to provide all parental care, the phenomenon being called Brood parasitism. Cuckoos like Indian hawk cuckoos, pied cuckoos, Indian cuckoos do not build their nest and lay their eggs into in a host's nest and

thereafter rely completely on their host to do the parental care for them. The Jungle babbler has been found to act as foster parents to provide all parental care. Recently I have been fortunate enough to witness this behavior where the Jungle babbler accepted parasitic eggs and provided shelter and nourishment to the newly hatched. Not only this, they invest time and energy provisioning their brood. Thus, the Jungle Babbler plays a crucial role in bird diversity.

The Jungle Babbler mainly feeds on insects but also eats grains, nectar and berries. They play an important role in agricultural pest management. Many destructive pests of crops like caterpillars, moths, weevils, crabs and spiders are eaten by the Jungle babbler. A research on Jungle babblers stated that they devour voraciously on insect matter especially on *Helicoverpa armigera*, the gram pod borer, a notorious pest infesting and causing heavy losses to crops like Pigeon Pea (*Cajanuscajan*) which is a vital crop of semi-arid tropical and sub-tropical farming system, providing high quality vegetable protein. *Helicoverpa* is known to feed on flowers, pods and seeds and is the most important biotic constraint affecting Pigeon Pea yields. Jungle Babblers have a peculiar foraging style which helps expose the *Helicoverpa* larvae as well as pupae through various phenological stages of Pigeon Pea. Thus, Jungle Babbler Play a crucial role in the ecosystem.

Kleven, O., Moksnes, A., Røskaft, E., & Honza, M., 1999. Host species affects the growth rate of cuckoo (*Cuculus canorus*) chicks. *Behavior Ecology and Sociobiology* 47 (1–2): 41–46; Hoover, J. P., & Reetz, M. J., 2006. Brood parasitism increases provisioning rate, and reduces offspring recruitment and adult return rates, in a cowbird host. *Oecologia* 149 (1): 165–173.

## Breathomics: The Smell of Morbidity

Sanskriti Rai

CSIR-JRF, Department of Transplant Immunology and Immunogenetics, AIIMS & PhD student (Batch 2020).Dept. of Zoology, CBPBU

Breathomics is a special branch of metabolomics that quantifies volatile organic compounds (VOCs) from collected exhaled breath samples for diagnostic purposes. VOCs are the result of both homeostatic processes and disease condition. In ancient Greece, physicians considered sweet smelling breath an indicator of diabetes or a fishy smell suggesting a liver condition. Now we

know there is an elevated level of ethane and pentane concentrations in exhaled breath during inflammatory diseases, and exhaled levels of sulfur-containing compounds are elevated in liver failure and allograft rejection. In 1971 Pauling *et al* first demonstrated that exhaled breath contains a complex mixture of Volatile organic compounds (VOCs). "Changes in the VOC profile of a person have enormous potential for the early diagnosis of diseases and can even be used for prognostic purposes," says Dr. Beniam Ghebremedhin, Microbiology expert at Helios University Hospital in Wuppertal, Germany.

The analysis of volatile organic compounds (VOCs) in exhaled breath has the potential to be a non-invasive, reliable and robust prognostic tool. There are several methods to determine VOCs, eNose technique is one among them. Understanding how exhaled VOCs profile are related to disease conditions is challenging due to the lack of an organized literature describing breath molecules related to diseases and related biomedical information. To surmount this problem, researchers from Taiwan have assembled a breath molecule database, the Human Breathomics Database (HBDB). The HBDB is a database that includes references, VOCs profiles and diseases associated with human breathomics pattern and is the most comprehensive HBDB of VOCs in human exhaled breath so far. It is a useful and organized resource for researchers and clinicians to identify and further investigate potential biomarkers from the breath of patients. (Database URL:<https://hbdb.cmdm.tw/>)

Currently, various researchers are underway to estimate the accuracy of exhaled biomarkers in the diagnosis, monitoring and treatment of patients in pulmonary medicine. Since biomarkers are likely to be affected by multiple (comorbid) conditions, there is a need for standardization of procedures, pilot studies for external validation which will contribute to the development of breathomics in to a clinical tool. Therefore, breathomics can be the next step toward non-invasive, stratified and personalized medicine in respiratory and non-respiratory diseases as well.

Buszewski, B., Keşy, M., Ligor, T., & Amann, A. (2007). Human exhaled air analytics: Biomarkers of diseases. *Biomedical Chromatography*, 21(6), 553–566; Fens, N.(2011). Breathomics in pulmonary disease. <https://hdl.handle.net/11245/1.366164>; Kuo, TC et al (2020). Human Breathomics Database. 2020, Database, 2020, 1–8; Pauling, L., Robinson, A. B., Teranishi, R., & Cary, P. (1971). Quantitative Analysis of Urine Vapor and Breath by Gas-Liquid Partition Chromatography. *Proc. Nat. Aca. Sci. of the USA*, 68(10), 2374–2376.; Wolfgang Behrends. (2020, June 4). Breathomic: Far more than hot air. *Healthcare-in- Europe.Com*. <https://healthcare-in-europe.com/en/home/3>

## How Lockdown helped Nature to Heal

Soumyadeep Sarkar

MSc. Student (Batch- 2019-2020)

Continuous air pollution, water pollution has adverse effect on biodiversity. As a result, species diversity has been declining day by day, and many species could no longer be seen around us. Due to Covid-19 pandemic, a nationwide lockdown was enforced. Although it may seem to be a serious crisis but it is one way blessing in disguise for the Mother Nature. Due to lockdown many wild animals can now be seen wandering freely around our surroundings. The public life has come to a standstill during this lockdown, on the other hand the wildlife has got its wood-notes back. Sun birds, Bronze winged Jacanas, Magpie Robbin, Red-whiskered bulbul, Red-vented Bulbul, Cinereous Tit, Eurasian collared Dove, Spotted Dove, Munia, White breasted Kingfishers, and Parakeets are being often sighted in the backyards and quite furious though Leopards, Tigers and Elephants were also found peeping into the residential areas. I have often witnessed the sight of flock of parrots flying over the sky in the afternoon, giving me tremendous amount of joy. They form a V-shaped angel of flight which allows every member to gain some lift and to reduce some drag.

The hoppers are the indicator of a rainy day. If you see them flying in a sunny day that means precipitation may happen after some time. The temperature has declined due to reduction in air pollution by automobiles, and also the amount of rainfall has increased. Butterflies are the indicator of the air pollution and generally they prefer less polluted area. So, due to the reduction in pollution butterflies are now being found wandering in the urban gardens too. Skippers, Swallowtails,



Great orange tip butterfly



Common Mormon butterfly

Whites & Yellows, Judies & Punches, Blues, Nymphalids and other varieties of butterflies are now a common sight. Nature lovers often long for capturing these moments in their camera and for a butterfly photographer like me owe it all to this lockdown.

Many birds have built nest in gardens during this lockdown because now it is the breeding time. So, they are busy in collecting foods and building nests. It is wonderful to watch how they are parenting the young ones. Those new born birds are brave, they do not seem perturbed if somebody goes towards them, and they await for the signal from their parents to take a short flight.

Thus, I believe this lockdown has proved to be a blessing for the wildlife. We got this wonderful opportunity to come closer to the nature and wildlife, to understand them and to find new ways to conserve them.

## The World of Freshwater Turtles

Sourav Sha

MSc. Student (Batch- 2019-2020)

More than half of the world's turtles and tortoise species are threatened with extinction. Out of 360 species 187 are threatened according to IUCN Red list criteria and 127 are critically endangered. India alone is home for 29 species of turtles and tortoise, such as crowned river turtle (*Hardella thurjii*), elongated tortoise (*Inditestudo elongate*), Asian giant soft-shell (*Pelochelys cantorii*), Assam roofed turtle (*Pangshuraysyl hetensis*), Black soft-shell turtle (*Nilssonina nigricans*) which is extinct in the wild and only found in two places in all over the globe. They are found in Baneswar, West Bengal, and Assam in India, and in Bangladesh. 22 species of Turtle is found in the northeast region making it one of the most diverse turtle faunas of the world.

Freshwater Turtles plays a critical ecological role in the environment because they help to control the aquatic vegetation, serves as scavengers and help to maintain the ecosystem of water bodies. The freshwater turtles are similar to other reptiles like snake and crocodilians. They are ectothermic, they have scaly skin enabling them as opposed to most amphibians to live outside of water but what makes them different from other reptiles is that turtles have a shell which is composed of carapace in back and plastron on the belly made up of bony plates. Just like our bones, turtles shell is actually made up of over 50 bones which include turtle's ribcage and spine. In some species of freshwater turtles adults are smaller than females or the opposite sometimes, but most of the species show very little sexual dimorphism. Turtles become active in the springs when water and air temperature is 15 to 20°C, spotted turtles



(*Clemmys guttata*) are the first freshwater turtle to become active in spring. For a turtle, their day is spent resting, basking, and foraging. Basking helps to boost metabolism of body. While most of the turtle exhibit diurnal behaviour, the

**Black Softshell Turtle of Baneswar, Cooch Behar**

common sapping and eastern musk turtle looks for food during night. The eastern musk turtle is

also known as stinkpot because it releases a foul smelling liquid to escape predators. During winter they go into hibernation, they cover up themselves with mud and sands, and they can survive throughout the winter at temperature as low as -10°C with help of antifreeze chemicals.

Many species of the freshwater turtles have faced declines in population due to habitat loss, poaching, pet trade of tortoise and freshwater turtle (that are most common in East Asia), and their consumptions for food and medicine. The turtles' long lives make them vulnerable to accumulated pollution in the environment over time. For female turtles, which usually spend their lives at lakes or river bottom, exposure to toxins accumulated in the sediments reduces the survivability of the offspring. Loss of habitat is the biggest threat to turtles and tortoise globally. But if we can conserve the habitat of the turtles by not polluting their habitat and the environment, we may see rise in their population. As this year during the lockdown, since people have been ensconced in their home, the turtles have seemed to take advantage of this prevailing situation. In Odisha's Gahirmatha beach and Rushikulya rookery which is referred as nesting ground of the Olive Ridley sea turtles (*Lepidochelys olivacea*), around 3.7 lakhs Olive Ridley have laid eggs at Rushikulya rookery and 4.2 lakhs in Gahirmatha beach.

Preventing turtle from extinction needs protection of their habitat and trade of wild turtles for food and medicine, needs to stop immediately. These charismatic creatures need to receive much attention in the world for their conservation.

# Departmental Feeds

## Academic Conference : A worthwhile opportunity

Rima Majumdar

Research Scholar, Parasitology laboratory, Dept. of Zoology, CBPBU & PhD Student (Batch 2018)

Year 2019 was an insightful year for me with two memorable events that broadened my horizons. This year I received the 'Elsevier Travel Grant' to attend the international conference on “Molecular Helminthology: An integrated approach” at San Antonio, Texas, USA, from 6<sup>th</sup> to 12<sup>th</sup> April, 2019. I presented my research work entitled, “Anthelmintic efficacy of silver nanoparticles biosynthesized from the phytopathogenic fungus *Alternaria alternata*”. The event sessions had been very informative and helped me adopt an international perspective through the exchange of ideas, sharing individual lab experiences & socializing with international counterparts. Sneaking out of an afternoon session, I visited the famous San Antonio River Walk, the Alamo, San Fernando Cathedral and the Convention Centre and had some authentic Mexican Enchiladas with Margarita at the famous “Costa Rio”. The best part of this visit were those multicity stopovers (Kolkata-Abu Dhabi-Chicago-San Antonio), where I enjoyed a variety of delicacies at the airport waiting lounges and of course plunged into duty-free shopping.



Later that year, I also attended the “30<sup>th</sup> National Congress of Parasitology and Global Summit for Malaria Elimination” organized at Jawaharlal Nehru University, New Delhi from 26<sup>th</sup> to 28<sup>th</sup> September, 2019, where I received the 'Best Poster Award' for my research “*In vitro* anthelmintic efficacy of Astrakurkurone, a novel triterpene synthesized from the fungus *Astreus hygrometricus*: Ultrastructural and Biochemical alterations in the cestode, *Raillietina echinobothrida*”. It was flattering to meet the Padmashree Prof. Veena Tandon, PI of my PhD supervisor Prof. Pradip Kumar Kar at this event.

I believe that attending a conference provides an excellent platform for professional development which might lead to potential future collaborations. In a nutshell, it was a wonderful experience attending these meetings, to get critical reviews, be a part of thought-provoking discussions and gain new insight into possible research interests.

## E-Learning during the COVID-19 Pandemic

Albina Subba

Assistant Professor, Dept. of Zoology, St. Joseph's College & PhD student (batch 2020)

The outbreak of COVID-19 pandemic has resulted in the shutdown of educational institutions across the world. As a result, the education system had to transform dramatically, with the distinctive rise of e-learning. There is a sudden shift from classroom to digital platform with regard to learning.

Presently I am enrolled as a PhD coursework student at the Department of Zoology, Cooch Behar Panchanan Barma University and e-learning being conducted there was my first experience. Since none of us were prepared for a monstrous situation as this, we even panicked. Apart from formal discussions in our WhatsApp group, our teachers decided to take online classes. It started with the online submission of assignments to the concerned teachers and preparation of Power Point presentations. Then one of our teachers asked us to join Google Classroom. I realized at that time that Google Classroom had always been there but I never knew about it, so I never used it. I found it very simple and easy to share materials and discuss queries in the virtual classroom. Some topics were covered by sharing the YouTube links where the subject was explained through videos. Mr. Prashant Mandal from Oman helped us in solving our Statistical problems online. I also got a chance to participate in live video conferencing through tech tools like Microsoft Office, Zoom, Google Meet, and Blue Jeans etc. Truly speaking I have heard some of these names for the first time. With

the initiative taken by our Head of the Department Dr. Hadida Yasmin, we were lucky enough to attend the webinar series on "Immunological Techniques" organized by Merck High-End Skill Development Centre that was Coordinated by Dr. Parul Tomar, Senior Expert II of Functional Genomics and Protein & Enzymes section. We also attended an online lecture on Flow Cytometry and its application by George Banik, Senior Application Specialist, BD Life Sciences.

To sum it up, I can say that it has been a wonderful experience to enter the world of virtual classes and this has made me technologically sound, confident and techno-friendly.

## An Educational Tour to Remember for Lifelong

**Rinki Barman**

MSc. Student (Batch 2018-19)

Our 2<sup>nd</sup> semester departmental excursion tour was to IIT Mandi, Himachal Pradesh and it was held in the month of May in 2019. We consider ourselves lucky for getting a very valuable opportunity to visit IIT Mandi under the guidance and supervision of Dr. Pradip Kr. Kar and Miss. Rachita Saha. We reached the institution on 17<sup>th</sup> May, and on the very first day we were briefed by the proficient PhD scholars of the Department of Life Science about their ongoing research on nanotechnology and Nano medicines, pathogenesis in Zika virus, bioconversion of cellulose to industrial valuables by synthetic microbial communities, Type II Diabetes, analysis of electroencephalograph to measure the electric potential of brain etc. In next day we were demonstrated how they perform their research works using various equipment, concurrently expert's paradigm about principle and protocols of some instruments which we had never seen before like Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM). I was greatly fascinated by their laboratories, equipment and their scientific works. This experience enlightened us with various scientific instruments, its applications and increased our inclination towards research background.

Later we enjoyed trekking in the steep Himalayan terrains in Kullu, spent an enchanting night in a tent at Jalori Pass, enjoyed horse riding at Serolsor Lake, visited the Hidimba Devi temple and were also lucky to see the Parashar Lake where once Rishi Parashar lived. Throughout the excursion all of us were excited and cheerful. Assuredly, it was the best experience I have ever had.



## Gaining Knowledge through Bioinformatics Workshop

**Rachita Saha**

Research Scholar, Parasitology laboratory, Dept. of Zoology, CBPBU & PhD Student (batch 2018)

The One day Regional Workshop on Bioinformatics was organized by the Department of Zoology in collaboration with the Bioinformatics Center, University of North Bengal on 30<sup>th</sup> August, 2019 at CBPBU. The main highlights of the workshop were microbial genome analysis, phylogenetic tree and 3-D protein structure (*in silico*). The workshop began with a delightful lecture by Prof. Arnab Sen, Department of Botany, NBU. Immediately after the lecture our technical session began where research scholars of the Bioinformatics Centre demonstrated various applications in the field of Bioinformatics applicable for research work. The main focus were softwares like Codon W to simplify the multivariate analysis, MEGA (Molecular Evolutionary Genetics Analysis) for conducting statistical analysis of molecular evolution and for constructing phylogenetic tree and also Swiss Model, which was dedicated to homology modeling of 3D protein structure. It was a great opportunity to participate in such a comprehensive workshop and to get enriched on this current and very useful topic. I personally was very fascinated with the functioning and applicability of the Swiss Model Software. The students, the scholars of our department as well as the other college student and

faculty members also participated in the workshop enthusiastically. It was a very nice interaction with the scholars who demonstrated and explained the use of software in a lucid manner. Attending the session I got very inquisitive and planned to assimilate the knowledge gained into my future research endeavours.



## West Bengal Science and Technology Congress, 2019

**Tamali Roy**

Research Scholar, Immunology & Molecular Cell Biology Laboratory, Dept. of Zoology, CBPBU & PhD Student (Batch 2020)

In August 2019, I had heard about the 27th West Bengal Science and Technology Congress - 2020 would be organized by the Department of Science and Technology and Biotechnology, Government of West Bengal. First of all I had to submit an abstract of scientific research and I presented it at the 27th Regional Science and Technology Congress at Alipurduar College, Alipurduar. In this platform, participants from all streams had presented their papers. Honestly, I feel very blessed that I got to share the platform representing the scholars from Northern region of my state who belonged to different Universities and to gather knowledge. The very insightful lectures were delivered by Dr. Monojit Debnath, NIMHANS, Bangalore on 'Fetal programming of mental disorder: role of immune system and environmental determinants' and Dr. Parthapratim Das, Alipurduar District Hospital on 'Snake Bite in Doors'. Dr. Hadida Yasmin, Associate professor, CBPBU chaired both the session. There were several papers being presented throughout the day. Suprio Ghosh one of my senior labmate also presented paper during the conference. My presentation was on 'Study of Immunostimulatory properties of *Drymaria diandra* on murine model', describing a part of my MSc. Dissertation work. It was indeed a splendid moment for me because my paper also got selected in the category of "outstanding paper presentation" in the regional level.

Thus I received the opportunity to present my paper in 27th State Science and Technology Congress, 2020 which was held in Kolkata Science city. The Science Congress also encouraged children by organizing Science Exhibition where they can showcase their creativity. I was thrilled and motivated listening to several eminent researchers from several top most Institutes of India namely, IICB Kolkata, IIT Kharagpur, JNCASR Hyderabad, TIFR Mumbai, and ICMR. The technical session of Zoology was addressed by Prof. Goutam Chandra, University of Burdwan and it was judged by Dr. Indranil Kar, Principal of Surendra Nath College, Kolkata and Dr. GautamKundu, Principal of Vidyasagar College, Kolkata. I presented my paper in this platform in front

of a larger audience and quite surprisingly I was again awarded as an outstanding presenter, which was beyond my expectations and this has motivated me to do further research to make this work more insightful. Therefore, the entire journey from Coochbehar to Kolkata was a priceless experience, as I had a golden opportunity being a part of such an educative and wonderful event.

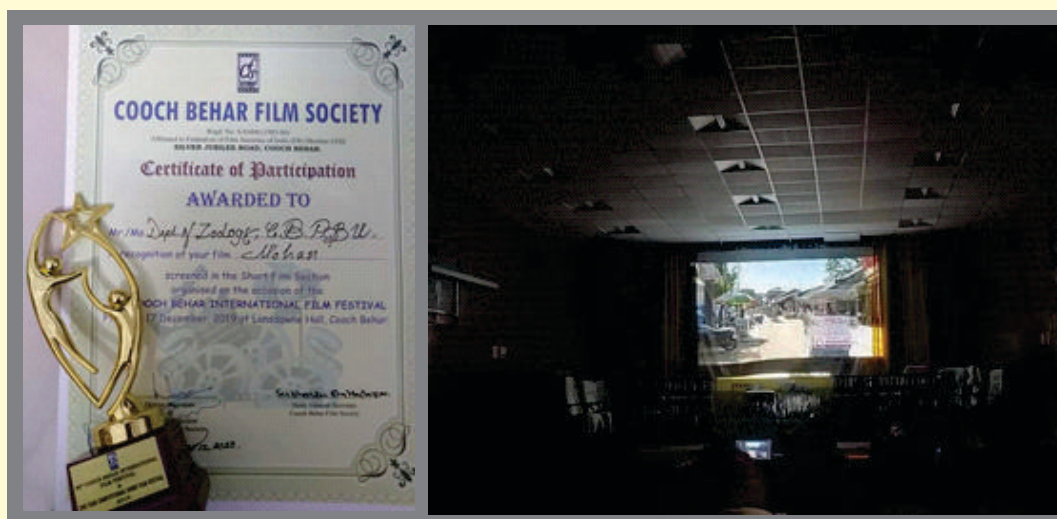


## Mohan : An Effort Towards Awareness for Conservation

**Rupam Dey**

MSc. Student (Batch- 2019-2020)

There was a short film making competition in our University Cultural program 2019. Some of our classmates decided to make a documentary film for participating in this competition, this was how the Theme Baneswar came into account. We were successful in completing the documentary, but in the competition day we came to know that no other team had submitted short film so, the competition was canceled by the Cultural Program Committee. That was quite disheartening news for us, knowing that our hard work would go in vain. Then to our delight, we came to know that an International Film Festival had been announced to be held in Cooch Behar. So we decided that we would submit our Documentary video on Mohan in that Film festival. All of our team members were full of pride and delighted to watch our Documentary on Baneswar's Mohan being screened in the International Film festival. The Organizing Committee applauded us for our efforts and we were also given a prize and certificate for participating. We tried to highlight this very unique and important topic through Cooch Behar film festival to spread awareness on Conservation of Black Shoft Shell Turtle of Baneswar also known as Mohan. Dr. Hadida Yasmin directed the video and Ripan Das, Sourav Sha and Rishab K Modi filmed the video. Myself Rupam Dey and Anirban Roy edited the video. Yasmin mam's voice put life into our video. It took about two days to film the video and another two days to edit it. It was fruitful only because of team work and cooperation. The video can be fetched at - <https://www.youtube.com/watch?v=65vrTT1yXo8>)





# Weathering COVID-19-Finding opportunity in Adversity

Supriyo Ghosh

Research Scholar, Immunology & Molecular Cell Biology Laboratory, Dept. of Zoology, CBPBU & PhD Student (Batch 2020)

*The woods are lovely, dark and deep, but I have promises to keep, and miles to go before I sleep. -Robert Frost*

Across the world, everyday people are applauding the brave healthcare workers on the frontlines who are busy in taking care of the COVID-19 patients and involved in screening the positive cases infected with Sars-Cov-2. So from here our story begins. Being students we are always curious to gain knowledge and experience in each part of life and novel corona virus pandemic was not the exception. The unprecedented outbreak of Covid 19 certainly was going to change our entire life pattern. My curiosity regarding this contagious virus gradually increased and thus quite often I rang up Dr. Yasmin to know more about it. From her I came to know that Cooch Behar soon is going to establish a COVID-19 Testing Centre at its Medical College and the first thing that came to my mind was how to be part of it. My plea was heard and Dr. Yasmin informed me about the date of interview to join as a Molecular Biologist in the COVID-19 laboratory at Cooch Behar Govt. Medical College. I cleared the interview, things happened so fast for a while I was amused. Unquestionably in the wake of joining, new difficulties started coming our way but we dealt to that quite efficiently and still doing so. As Dr. Yasmin says “If you are facing problems, that means you are atleast doing something, deal with it wisely and you will find the way”. So with her words I am ready to face new challenges and I am sure I will overcome it. By her words, new difficulties are yet to come but we are all set to deal with it head-on. I must say the entire fraternity of the Department of Zoology has been consistently pumping energy and showing us new avenues for fulfilling new dreams. My fellowmate Anik Bhattachajee was already involved in RT-PCR based COVID-19 testing at Agartala Govt. Medical College and then I joined Cooch Behar Govt. Medical college followed by Sammilita Chakraborty who joined two months after my joining. Dr. Yasmin did several awareness program related to COVID-19 crisis. The department has also donated the RT-PCR machine in temporary basis for testing to the Cooch Behar Govt. Medical College. Mr. Anik Bhattacharya and Supriyo Ghosh together took an initiative to come up with a video to demonstrate the procedure of sample collection from COVID patients and how to execute RT-PCR based COVID-testing.



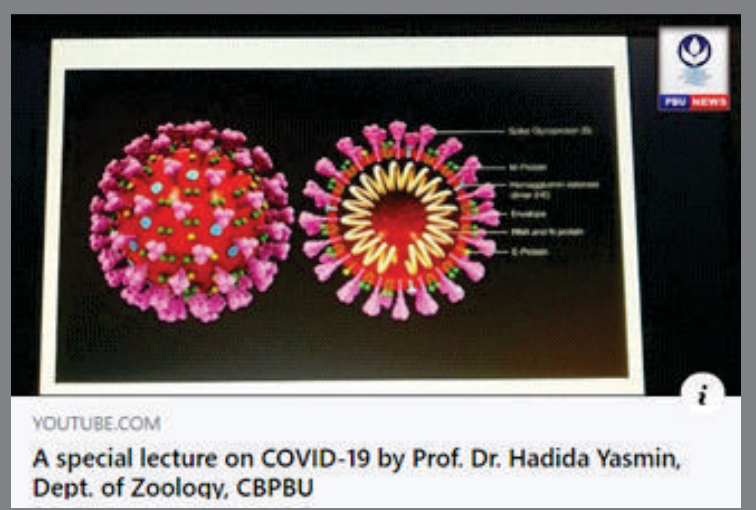
Supriyo Ghosh



Anik Bhattacharya



Sammilita Chakraborty



# National Science Day Celebration, 2020

**Anureeta Adhikary**  
MSC. Student (Batch-2018-19)

The National Science day (NSD) 2020 was celebrated on 28<sup>th</sup> February 2020, with a lot of enthusiasm at Cooch Behar Panchanan Barma University (CBPBU) to commemorate the discovery of the 'Raman Effect'. The government had designated the aforementioned day as National Science Day in 1980 as on this day Sir C.V. Raman announced the discovery of the 'Raman Effect' for which he was awarded with Noble Prize on 1930. National science day is being celebrated every year to spread a message about the significance of scientific applications in the daily life of people.

The National Science Day 2020 theme was 'Women in Science'. Since the women across the world is setting new examples and marking their prominent presence with their scientific work so far so this year's theme was mainly to appreciate and acknowledge their contributions to the science and technologies. This year celebration saw various activities like wall magazine, quiz, painting, essay writing, poster competition being organized as a part of National Science Day activities at CBPBU; in which the Post Graduate (PG) departments of Mathematics, Botany, Hindi and Zoology and Under Graduate (UG) colleges like Dinhata college, Tufanganj College and ABN Seal college participated with great enthusiasm that really pumped up the celebration. The program was inaugurated with the valuable speech of our respected Vice Chancellor Dr. Debkumar Mukherjee. Then the event was started with a presentation on 'Woman in Science' presented by the fourth semester students of Zoology department in which the seventeen most influential women scientists across the globe were acknowledged for their major contributions in various field of science. Forty students participated in wall magazine competition and paid their tribute to the women scientists across the world for their immense contribution to the scientific field. Mathematics department was awarded with the first prize for their outstanding presentation. Ten students participated in painting competition from all the aforementioned departments and colleges and amongst them, Mr. Arup Kumar Das from Zoology department won the first prize for his thought-provoking masterpiece in which the illustration showed the serious impediment that the women of our society have to face for their progress. Thirty group of students participated in quiz competition among which again Zoology department was the clear winner and awarded with the firstplace. Having the theme of 'Women in Science', ten students participated in easy writing competition where Botany department grabbed the first prize. Eighteen group of students participated in poster competition and Mathematics department at Post Graduate level and ABN Seal College at Under Graduate level were declared as the winners respectively. The programme finally came to an end with the certificate distribution among the UG and PG participants for their tireless effort to make the programme a successful one.

Lastly, it could be said that as a student, it is our responsibility to honour the great scientists and their inventions by contributing greatly to the field of science through innovations so here's wishing all the science enthusiast very best to enhance their scientific zeal.



# International Conference on Cognitive Science, Language and Reality- A Thrilling Experience

**Raviranjan Pandey**

MSc. Student (Batch 2017-18)

University like ours, Cooch Behar Panchanan Barma University where most of the students comes from the rural and backward area, get very less opportunity to interact with the researcher/ scientists from other parts world. So, we were very excited after hearing the news that an international seminar is going to be organized in our university. The international seminar was held for 3 days (9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> of January, 2020) in collaboration with the Institute of cross-cultural studies and academy exchange, USA and involving 25 colleges of North Bengal. The topic of the seminar was cognitive science, Language, and Reality and divided into 3 Sub-theme- (I). Cognitive science and the Universe (II). Cognitive Reality, Idea, and Ethics (III) Language, Literature, and Culture. As this was the interdisciplinary seminar, we had a great opportunity to listen to the professors/ scholars from diverse fields like philosophy, language, and literature.

From the department of Zoology, 3 of us- Supriyo Ghosh, Sanskriti Rai, and I had participated in this conference. As all of us from our department belonged to field of biology, we choose our topic accordingly. As Cognition revolves around learning and memory, loss of these fundamental abilities is a common thread linking all cognitive disorders. So, keeping this in mind, I presented my paper



entitled, "Synaptic plasticity: its role in memory formation and cognitive disorder". To date, enough experimental evidences are available which suggests that, the type of synaptic change that is brought about by Long term potentiation and Long term depression (form of synaptic plasticity) plays an important role in memory formation.

Whereas, Sanskriti presented her paper entitled "A new dawn for the cognitive disorders: possibilities of early diagnosis and development of better therapeutics". In current scenario development of potential biomarker is very much important for diagnosis of the neurodegenerative disease at the early stage and assessment of up and down regulation of trophic factors, viz; BDNF, Neurotrophin-3 etc. can act as potential biomarker for the diagnosis and treatment of variety of neuropsychiatric diseases. Together with the fundamental research possible by Optogenetics, it is more likely that new treatments for these disorders can lead to a new dawn of better diagnosis and pharmaceuticals. Mr. Supriyo Ghosh, research scholar of our department presented a paper entitled "Issues Regarding Behavioural Genetics Research through Computational Tools". As behaviour and genes are having great tempestuous relationship between science & society and hence he proposed that investigation of genes liable for human moral conduct needs a careful attention and its detailed analysis can be done using Bioinformatics tool such as BLAST technique, following the mechanism analysis by genetic mapping, reverse genetics, KEGG pathway analysis, big data analysis and likewise to make database for information assortment. He stood first in that category being the best presenter. The session was chaired by Prof. Pradip K Kar, of department of Zoology, CBPBU.

It was quite a surprise for me when I was asked by Dr. Yasmin to meet Prof. Dr. Krishna Prakasha Tripathi (Professor of Physics at Varanasi, UP) as he had some query about my presentation. Prof. Tripathi and I had a long discussion related to my presentation as well as about other fields of neuroscience and physics. He gave me several inputs about how to proceed towards my career goal and research interest and also praised me for my presentation. My overall experience in attending the seminar and listening to the expert from our field motivated me a lot to pursue my carrier in the field of cognitive science. Attending such seminar, ignite the curious mind of PhD aspirants like us.

## Van Mahotsava- Plantation Program

**Priyanka Sharma**

CSIR-JRF, Immunology and Molecular Cell Biology Laboratory, Dept. of Zoology, CBPBU & PhD student (Batch 2020).

**V**an Mahotsav is a festival that is celebrated in India since 1950 and also known as Forest Day. The festival aims at increasing the green cover of India. The day was established 66 years ago by Ministry of Agriculture and has contributed in planting lakhs of trees in the entire country.

In this year 2020 our Dept. of Zoology, CBPBU on 28<sup>th</sup> July 2020 planted tree saplings at the University campus in order to celebrate Van Mahotsav program. Forest Department of Cooch Behar had donated total 50 saplings of Mango, Lichy, Lemon, Guava and few other beneficial trees. Due to COVID pandemic situation, the event this year has been altered to avoid rush of people. This pandemic has brought several activities to grinding halt. Unfortunately the University classes were suspended due to lockdown as per the Government's order. As there were only four of us coming to lab (Immunology & Molecular Cell Biology) alternately in the midst of this lockdown to take care of our animal house, as we don't have any helping assistance for that. So, I, Tamali Roy and Karabi Pramanik looked for the best location for the plantation in the University campus where the saplings could grow well. Our University gardener (Shri. Manik Barman) also helped us in this work.

We felt delighted being part of this greenery program and to celebrate Van Mahotsav program. That momentary joy was very much needed in this darkest phase of the COVID crisis. We are just trying to make a small contribution to the environment by planting trees in our University campus. Hopefully more people will come forward for the event. Hopefully the sapling will grow into beautiful trees and will entice more birds to the campus.



## The Triumph that Ceases your Mind- Cultural Festival, 2019

**Nilanjan Chakraborty**

MSc. Student (Batch 2019-20)

*“One's true strength emerges when he has something or someone precious to protect”.*

**T**he smallest of efforts always count, especially when made into one single force. Even a gust of wind can pierce deeper than the mightiest of swords if aimed at the correct point. I would like to narrate a similar tale of glory for the Department of Zoology, CBPBU during the University's Inter- Departmental cultural competition of 2019.

On the first instance, when the dates for the event were declared, every student was discontented. Such a reaction was because the dates of the internal exams clashed with the cultural program. However, the situation was resolved by our teachers as they decided to change the exam schedule.

The much anticipated day of the event arrived and we were more than ready to give our best. With a strength of only 36 students, it surely looked like we simply didn't have enough names to leave a mark. But that didn't prove to be a hindrance. Majority of the students participated in numerous events. One by one all of our participants ascended the stage and displayed their talent in front of the whole university. The program was for 3 days and on the last evening, the winners would be announced. The department with the most wins would be crowned the champion.

There were several events – Rabindra Sangeet , Najrul Geeta, drawing, debate, photography, short film, folk dance and so on – and one after the other we managed to win the majority of them. As a result, we managed to win a total of 16 prizes

that eventually lead us to become the runner-up in the cultural competition, while the Department of Bengali beat us by a few points.

I would like to dedicate this eventful note to those who belong to this department and played their part elegantly to attain this achievement. Participants who won various events and those who didn't, victory was ours. The students who worked behind the scenes and those who cheered and supported us all the way: The trophy belongs to all of you. The teachers of the department were very supportive and insightful as they guided us to this path and motivated us whenever one felt blue. The thing we learnt at the end of the day is that it's not over until it's over. And we must keep this intuitive spirit inside of us in every step of our future .



## Biodiversity Tour to Buxa and Jayanti Hills

**Nadira Nasim Chaiti**

MSc. Student (Batch 2019-2020)

*“The world is a book and those who do not travel read only a page” - Saint Augustine*

On the delightful and pleasing day of 8<sup>th</sup> December, 2019, the 2<sup>nd</sup> and 4<sup>th</sup> semester MSc. students of Zoology department got an opportunity to experience the rich biodiversity and the mesmerizing flavour of Mother Nature of Buxa and Jayanti hills. The location was along the bank of “The Queen of Dooars” Jayanti river inside the Buxa tiger reserve of Alipurduar District of West Bengal. It was my most satisfying experience because we were very lucky to see an enormous variety of flora and fauna. Buxa tiger

reserve has recorded more than 450 species of trees, 650 species of shrubs and herbs, 100 species of grasses and 10 different species of bamboos. It is home to 284 bird species including Oriental peid hornbill, Amur falcon, Eurasian griffon, Black naped oriole etc. Indian leopard Bengal tiger, Clouded leopard, Asiatic golden cats are also found here. Our 4<sup>th</sup> semester seniors did several quadrate



methods to study the species richness and relative abundance at random in different parts of Jayanti river bed and in their quadrate study they enumerated several black garden ant, red small ant, stiletto fly, lynx spider etc. We were accompanied by our respected teachers Dr. Hadida Yasmin and Dr.Samik Bindu and we are very much thankful to them for this opportunity.

# মোহন সংরক্ষণে কাজ করবে বিশ্ববিদ্যালয়

## কোচবিহার

কোচবিহারে মোহন সংরক্ষণের জন্য বিশ্ববিদ্যালয় কর্তৃক একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।

কোচবিহার, ২৩ ফেব্রুয়ারি : বাম্পের শিবদিঘির সড়কে শিবদিঘির কেন্দ্রিক কাজ (মোহন) রয়েছে। তারা শিবির জলে পানি পূরণে এবং সেখানে পুষ্টি সরবরাহ করে। এই কেন্দ্রিক কাজের অধীনে বাম্পের শিবদিঘির সড়কে একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।



বাম্পের শিবদিঘির সড়কে কাজ করা হচ্ছে।

# বাণেশ্বরে 'মোহন' রক্ষায় পঞ্চানন বর্মা বিশ্ববিদ্যালয়

## কোচবিহার

বাণেশ্বরে শিবদিঘির সড়কে 'মোহন' রক্ষায় পঞ্চানন বর্মা বিশ্ববিদ্যালয় কর্তৃক একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।

বাণেশ্বরে 'মোহন' রক্ষায় পঞ্চানন বর্মা বিশ্ববিদ্যালয় কর্তৃক একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।

# মোহন সংরক্ষণে উদ্যোগী পঞ্চানন বর্মা বিশ্ববিদ্যালয়

## কোচবিহার

কোচবিহার, ২৩ ফেব্রুয়ারি : বাম্পের শিবদিঘির সড়কে শিবদিঘির কেন্দ্রিক কাজ (মোহন) রয়েছে। তারা শিবির জলে পানি পূরণে এবং সেখানে পুষ্টি সরবরাহ করে। এই কেন্দ্রিক কাজের অধীনে বাম্পের শিবদিঘির সড়কে একটি কমিটি গঠিত হয়েছে।

কোচবিহার, ২৩ ফেব্রুয়ারি : বাম্পের শিবদিঘির সড়কে শিবদিঘির কেন্দ্রিক কাজ (মোহন) রয়েছে। তারা শিবির জলে পানি পূরণে এবং সেখানে পুষ্টি সরবরাহ করে। এই কেন্দ্রিক কাজের অধীনে বাম্পের শিবদিঘির সড়কে একটি কমিটি গঠিত হয়েছে।

# দুর্গাপূজোর পর মোহন নিয়ে ফের সমীক্ষা

কোচবিহার, ৩০ অগাস্ট : দুর্গাপূজোর পর থেকে মোহন নিয়ে ফের সমীক্ষার কাজ শুরু করবে পঞ্চানন বর্মা বিশ্ববিদ্যালয়। বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের তরফ থেকে এই সমীক্ষার কাজ শুরু করা হয়েছিল বছর দুয়েক আগে থেকেই। তবে, করোনা পরিস্থিতির জেরে গত কয়েক মাস সমীক্ষার কাজ আপাতত বন্ধ রেখেছেন তারা। তবে, পরিস্থিতি স্বাভাবিক হলে পূজোর পর থেকেই ফের সমীক্ষা শুরু করা হবে বলে ওই বিভাগের তরফে জানা গিয়েছে। বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের দাবি, বাণেশ্বরের মন্দির সংলগ্ন শিবদিঘি ছাড়া ওই এলাকার ৮৫টি জলাশয়ে আপাতত মোহনের সন্ধান মিলেছে। তাদের অনুমান, খতিয়ে দেখা হলে সেই এলাকার বেশ কিছু জলাশয়ে তাদের দেখা মিলতে পারে।

কোচবিহার-২ ব্লকের বাণেশ্বরের বেশ কিছু জলাশয়ে এই বিবল প্রজাতির

কল্পের দেখা মেলে। তা মোহন নামেই পরিচিত। বাণেশ্বরের এলাকার মানুষ মোহনের দেবতাজ্ঞানে পূজা করেন। পর্যটনস্থল বাণেশ্বরের আকর্ষণের কেন্দ্রবিন্দু এই মোহন।

বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান হাদিদা ইয়াসমিন বলেন, '২০১৮ সাল থেকে এই প্রোজেক্ট শুরু হয়েছিল। রাজা সরকারের উচ্চশিক্ষা দপ্তরের পক্ষ থেকে এ বিষয়ে আর্থিক সাহায্যও পাওয়া গিয়েছে। করোনা পরিস্থিতির কারণে আপাতত সমীক্ষার কাজ বন্ধ রয়েছে। তবে, পূজোর পর থেকেই আবার সমীক্ষার কাজ শুরু করা হবে।' তিনি আরও জানান, ওই এলাকার বেশ কিছু জলাশয় থেকে আগে জল সংগ্রহ করা হয়েছিল। সেই কাজগুলি এখন লাবে করা হচ্ছে।

এ বিষয়ে বিশ্ববিদ্যালয়ের উপাচার্য ডঃ দেবকুমার মুখোপাধ্যায় বলেন, 'আশা করছি সবকিছু দ্রুত ঠিকঠাক হয়ে যাবে। দুর্গাপূজোর পর থেকে ফের এই সমীক্ষার কাজ শুরু হবে বলে আশাবাদী।'

শুক্রবার বাণেশ্বরের শিবদিঘিরে একটি মোহন ভেসে উঠত দেখা গেল। তবে, এই মোহনটির মূল্য মীলবে এবং কেন হয়েছে তা নিয়ে এখনও ধোঁয়াশা রয়েছে। কিছুদিন আগেও ট্রেলের চাকায় পিষ্ট হয়ে একটি পূর্ণবয়স্ক স্ত্রী কাকের মৃত্যু হয়েছিল। এরপর এদিনের এই ঘটনাতেও ব্যাপক চাকলা ছড়িয়েছে।

নিম্নেও প্রশ্ন তুলেছেন অনেকেই। এ বিষয়ে সদর মহকুমা শাসক জয় শেখর ট্রাস্ট বোর্ডের অন্যতম সদস্য সঞ্জয় গাল জানান, 'মোহনটিকে গোপনীয় করে রাখা হয়েছে। এখনও রিপোর্ট আসেনি।' তিনি জানান, মৎস্য খণ্ডের থেকে শিবদিঘির জল পষ্টি করা হয়েছিল। তাতে দেখা গিয়েছে শিবির জলে অক্সিজেনের মাত্রা ঠিকই রয়েছে।

বাঁচাতে উদ্যোগ

- দুই বছর আগে মোহন সমীক্ষার কাজ শুরু হয়েছিল
- করোনা পরিস্থিতির জেরে গত কয়েক মাস

সমীক্ষা বন্ধ ছিল

- শিবদিঘি ছাড়া আরও ৮৫টি জলাশয়ে মোহনের সন্ধান মিলেছে
- পঞ্চানন বর্মা বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগ এই সমীক্ষা করবে

**What Press talks about the Department**

# লকডাউন শেষ হলেই ফের শুরু সমীক্ষা

অনিদ্রম সাহা  
কোচবিহার

শুক্রবার বাণেশ্বরের সড়কে ১-৩টি জলা জালগার 'মোহন' দেখা গিয়েছে। পঞ্চানন বর্মা বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের উদ্যোগে ওই বাণেশ্বর সমীক্ষার কাজ শুরু হয়েছিল। লকডাউন পরিস্থিতির মধ্যে তা অসম্ভব আপাতত স্থগিত রয়েছে। ওই সমীক্ষার প্রথম ধাপে ওই সব এলাকার মোহনের সন্ধান মেলে। পরিস্থিতি স্বাভাবিক হলে মের কাছ ও কিছু এলাকার সমীক্ষা করা হবে। তাতে মোহনের কোন সাখা থাকতে পারে বলেই অনুমান।

কোচবিহারের বাণেশ্বর মোহনের জন্য পঞ্চানন ও গবেষকদের কাজ পরিচালিত। এলাকার বাসিন্দা বিবল প্রজাতির বাসিন্দার মোহন নামে ডাকেন। মোহনটির শিবদিঘিরে ওই মোহন দেখার ঠিকানা থেকেই ট্রাস্ট ঘনিষ্ঠ পুষ্টি সরবরাহ করে। তাতে মোহনটির জল পষ্টি করা হয়েছিল। তাতে দেখা গিয়েছে শিবির জলে অক্সিজেনের মাত্রা ঠিকই রয়েছে।

# বাণেশ্বরের মোহনদের সংরক্ষণে উদ্যোগী পঞ্চানন বর্মা বিশ্ববিদ্যালয়

কোচবিহার, ৩০ অগাস্ট : বাণেশ্বরের মোহনদের সংরক্ষণের জন্য বিশ্ববিদ্যালয় কর্তৃক একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।

বাণেশ্বরের মোহনদের সংরক্ষণের জন্য বিশ্ববিদ্যালয় কর্তৃক একটি কমিটি গঠিত হয়েছে। এই কমিটির প্রধান পদে বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের প্রধান অধ্যাপক ড. দেবকুমার মুখোপাধ্যায়ের নেতৃত্বে একটি কমিটি গঠিত হয়েছে।

# বায়োইনফরমেটিক্স নিয়ে বিশ্ববিদ্যালয়ে কর্মশালা

কোচবিহার, ৩১ অগাস্ট : কোচবিহার পঞ্চানন বর্মা বিশ্ববিদ্যালয়ে বায়োইনফরমেটিক্স বিষয়ে কর্মশালা হল। কর্মশালায় কম্পিউটার ও সফটওয়্যারের সাহায্যে প্রোটিন ও ডিএনএ সম্পর্কিত তথ্য বিশ্লেষণ নিয়ে আলোচনা হয়েছে। উত্তরবঙ্গ বিশ্ববিদ্যালয়ের বায়োইনফরমেটিক্স সেন্টার ও কোচবিহার পঞ্চানন বর্মা বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগের যৌথ উদ্যোগে কর্মশালাটি আয়োজিত হয়েছে।

বায়োইনফরমেটিক্স সেন্টারের কোঅর্ডিনেটর অধ্যাপক অর্ণব সেন ও পূর্বাচল গবেষক এদিনের কর্মশালায় বক্তৃতা দেন। পঞ্চানন বর্মা বিশ্ববিদ্যালয়ের উপাচার্য দেবকুমার মুখোপাধ্যায় বলেন, 'আমাদের বিশ্ববিদ্যালয়ের প্রাণীবিদ্যা বিভাগ ও উত্তরবঙ্গ বিশ্ববিদ্যালয়ের বায়োইনফরমেটিক্স সেন্টারের সহযোগিতায় তথ্যভিত্তিক এই কোর্স চালুর ব্যাপারে আমরা আশাবাদী।'

এদিনের কর্মশালায় ৭১ জন এমএসসির পড়ুয়ার পাশাপাশি গবেষক ও বিভিন্ন কলেজের অধ্যাপকরা অংশ নেন। এছাড়া, পঞ্চানন বর্মা বিশ্ববিদ্যালয়ের রেজিস্ট্রার আব্দুল কাদের সাফেলি, প্রাণীবিদ্যা বিভাগের প্রধান হাদিদা ইয়াসমিন, অধ্যাপক প্রদীপকুমার কর সহ অন্যান্য উপস্থিত ছিলেন।

# বিশেষ জ্ঞানী

## সৌম্যদীপ সরকার

মহাবিশ্বে, মহাকাশে  
মানব কল্যাণে নিরন্তর সাধনা করিছেন যেই গুণী  
বিজ্ঞানী তাহাকেই জানি।

মানবের তরে যাঁরা নিবেদিত প্রাণ  
বিশ্বের দরবারে উড়ায়েছে বিজয় কেতন  
তাহারই অমর বিশ্ব বন্দিত  
গাহি তাহাদেরই জয়গান।

নর কিংবা হোক না নারী  
কুর্নিশ করি তাহারে।  
নারীশক্তির উত্থান আজি  
বিশ্ব-বাংলা মাঝারে।

নারীর আছে শক্তি শত।  
আছে তাহার নিষ্ঠা যত,  
ধৈর্য্য যত,  
তাই দিয়ে সে তৈরি করে  
নব অক্ষুর বিশেষ জ্ঞানের।

বিশেষ জ্ঞানের আলোকচ্ছটায়  
জয় করে সে স্বর্ণকমল।  
সেই কমলের অলোক দূতি  
দূর করে সব আঁধার-রাতি।

রোজালিন ফ্রাঙ্কলিন, ম্যারি কুড়ি  
কিংবা ডেরোথী, ম্যারি ম্যারিয়ান,  
সৃষ্টি সুখের উল্লাসে মেতে  
হইয়াছে বলিয়ান।

ভারতমাতার স্বর্ণগর্ভে জন্মিয়াছে নারীগণ,  
মহীয়সী তাঁরা।  
বিজ্ঞানের নানা শাখায় করিয়াছেন বিচরণ।

ভূতল হতে মহাকাশ পথে,  
গ্রহ হতে গ্রহান্তরে  
পদার্থবিদ্যা, রসায়ন হতে  
জীববিদ্যার গহন গহুরে  
নবদিগন্ত উন্মোচনে করিয়াছে সৃজন।

অর্চনা ভট্টাচার্য্য, সুধা ভট্টাচার্য্য,  
কিংবা আন্সামনি, কমলা সোহিনী,  
চারুশিলা, মিনাক্ষী, কল্পনা চাউলা, —  
গাহি তাহাদেরই গান।  
ভারত মায়ের সন্তান হয়ে  
জানাই সম্মান।



## প্লাস্টিক দূর হটো প্রতাপ কুমার ঝাঁ

বিজ্ঞান যত, প্রগতির রথে  
চলে সমাজের মঙ্গলে...  
ভরে যায় কেন এদেশের মাটি  
প্লাস্টিকরূপী জঙ্গলে ??

মুখে বলি মোরা কত বড় বুলি  
সচেতনতার কথা...  
প্লাস্টিক নিয়ে নেই কেনো বাপু  
আমাদের মাথাব্যথা ??

বাজারেতে গিয়ে নিত্যপণ্য  
ক্রয় করি মোরা কত...  
বিক্রেতা দেয় যত সামগ্রী,  
ক্যারিব্যাগ দেয় তত।

হাসিমুখে মোরা সেই ক্যারিব্যাগ,  
যেথা খুশী দেই ফেলে...  
কখনও ভাবিনা একাজের ফলে  
দেশ যাবে রসাতলে।

মাটি ও জলের চরম দূষণ  
প্লাস্টিক করে যত....  
বইখানা পড়ে, জেনে রাখি যদি,  
লাজে মাথা হবে নত।

খাদ্যদ্রব্যে মিশে যায় বিষ  
প্লাস্টিকে থাকে যত,  
কর্কট রোগ ছড়িয়ে পড়ছে  
ঘরে ঘরে অবিরত।

তাই তো এবার সময় এসেছে  
প্লাস্টিক বর্জনে,  
সচেতন হোক, মানবসমাজ  
ঘরে ঘরে প্রতিজনে।

# Basanto Utsav (Spring Festival)

