



Bio-Rhythms

(An Initiative of Amity Institute of Biotechnology)

[Powered by: Internal Quality Assurance Cell (IQAC) & MOE- Institutional Innovation Council]

Message from the Vice Chancellor



I am glad to note that the Amity Institute of Biotechnology of Amity University Jharkhand is releasing Newsletter entitled “Bio-Rhythms”. I believe that this Newsletter would provide an opportunity for transmission of knowledge based on latest research and are considered to be an essential part of academic programmes of all renowned Universities. I am also glad to learn that many students and faculty members are contributing their short articles in this Newsletter. I would like to congratulate the Amity Institute of Biotechnology for their commitment and sincerity. I strongly believe that this Newsletter would definitely be a foundation for the growth of news ideas towards a better tomorrow.

Prof. (Dr.) Raman Kumar Jha
Vice Chancellor

Message from the Director



I am extremely pleased to know that Amity Institute of Biotechnology of Amity University Jharkhand is releasing the Newsletter Bio-Rhythms. I appreciate the efforts of the Editorial Team for releasing this Quarterly Newsletter and my best wishes to the Editor in Chief, Newsletter Bio-Rhythms & the entire Editorial Team of Organizers for conceptualizing this Newsletter. I extend my good wishes and support in all manner for making this Newsletter a grand success.

Prof. (Dr.) Ajit Kumar Pandey
Director

“When God pushes somebody, inspires somebody, leads somebody - no power in the world can stop a such person....!”

- Dr. Ashok K. Chauhan



Message from the Registrar



The Newsletter Bio-Rhythms is being released by Amity Institute of Biotechnology of Amity University Jharkhand. This will focus the attention of the Students and Faculty Members working in various disciplines of Life Sciences as well as Biotechnology from fundamental studies to research applications. It is expected that this Newsletter will provide a forum to the young students and entrepreneurs to interact on the recent developments and identify emerging feature areas of growth in the field of biotechnology. I also thank all the Editorial Team Members of this Newsletter who worked diligently for the successful release of this Newsletter Bio-Rhythms.

Mr. Prabhakar Tripathi
Registrar

From the Editorial Desk



It is my privilege and honour as the Editor-in-Chief of the Newsletter “Bio-Rhythms” published by Amity Institute of Biotechnology, Amity University Jharkhand. I am sure that this initiative of the department under the mentoring of Hon’ble Vice Chancellor and the Higher Officials of the University will boost the thoughts of the students mind for writing the news related sciences and reading information as well. I thank on behalf of Members of Editorial Board to the contributors of this Newsletter “Bio-Rhythms”.

Dr. Jutishna Bora
Editor-in-Chief

A Century old Biomolecule: Prospect of Growth



Dr. Kunal Kumar
HoD, B.Sc (H) BT

Biocatalysts contributing to sustainable product development have found its presence in Food Technology, Medicines, Agriculture, Textile industries and more recently noted its presence in green chemistry. Recent Developments in this century old field of enzymology marked another feather. Enzymes can now clean Pan-stained walls, Door, Railway compartments. Glucose oxidase and catalase can remove oxygen from headspace of packaged foods and prevent rancid smell. Likewise, Urokinase isolated from human urine have found use in the removal of blood clots of human body. Industrial Enzymes market size may be as high as \$11.9 Billion by next year contributing immensely to bioeconomy across globe. A better prospect of these biomolecule will open new avenues of jobs and demand of trained manpower by next couple of years would increase tremendously.



Lifestyle-mediated stress and female reproductive outcome



Dr. Shilpa Prasad
Assistant Professor,
AIBN

In present days, stress is part of everyone's life and can affect physical and mental status of a healthy person by disturbing body homeostasis. Stress could be due to different lifestyle changes such as cigarette smoking, environmental and occupational exposures, psychological stress, and alcohol consumption. These lifestyles can generate stress that can further affect reproductive health of a female. Studies suggest that chronic psychological stress can result in poor reproductive as well as in vitro fertilization (IVF) outcome in female. This affected reproductive outcome is possibly due to its negative impact on female reproduction by targeting at the level of ovary, follicles, and oocyte. The changes in the level of stress hormone such as cortisol causes reduction in estradiol production which deteriorates oocyte quality and thereby reproductive outcome. Adaptation of wrong lifestyle behaviors may cause increase in reactive oxygen species (ROS) in the ovary, that causes negative impact on female reproduction. Oxidative stress (OS) triggers apoptosis in majority of germ cells within the ovary and even in ovulated oocytes. OS in the follicular fluid deteriorates oocyte quality and thus reduces reproductive outcome. Stress mediated OS is one of the major factors that causes direct negative impact on oocyte quality and limits female reproductive outcome.

Dog's are Kid's Best Friends: Reducing Symptoms of Cancer Treatments



**Ms. Brahmi
Narayan Oraon**
B.Tech. BT-VIII

Cancer is the biggest cause of mortality in children, and oncological therapies are physically, mentally, and financially draining on both the kid and his or her family, resulting in a lower quality of life. Nausea, vomiting, discomfort, decreased appetite, unhappiness, anxiety, depression, decreased social contacts, and weariness are common signs and symptoms in children undergoing therapy. Most children experience these symptoms in clusters, according to Rodger's comprehensive review, thus identifying solutions to address numerous symptoms at the same time is critical. Children who are receiving cancer treatment are frequently exhausted, socially isolated, lose weight, lose bone density, and are worried. All of which we are capable of treating. Playing catch, grooming the dog, feeding the dog, walking the dog, obstacle courses, and putting on dog shows are just a few examples. The researchers discovered that the patient's pain, tension, and annoyance levels were dramatically lowered after analyzing the outcome measure data. Caregivers also experienced lower levels of worry, tension, and mental disorientation, according to the study. Depressive symptoms were reduced in both cares and patients. It's a good idea to combine PT with AAT therapies a strategy that therapists may employ to address these symptom clusters as well as physical impairments, activity constraints, and participation restrictions that arise throughout treatment Dogs are unquestionably a child's best companion.



Biotechnology – An Emerging Branch of Life Sciences



Ms. Surbhi Kumari
B.Sc. (H) BT-II

In this busy life people have stopped focusing on themselves to a great extent. Unlike before there are new diseases emerging globally and different fields in research and development have paved a path and has given an insight to treatment and cure of these diseases. Biotechnology is one such field of biology that deals with different tools and techniques for enhancement and achieving its different applications on living organisms. The term biotechnology was first coined by Karl Erekey in 1919. It is basically a blending of living sciences with engineering sciences.

Biotechnology has its vast branches in different fields such as industrial, agricultural, medical etc. Unique and tremendous advancements have been made so far in different sectors. In past years, technologies like recombinant DNA technology have reinforced the health, heightened the food quality and made survival smoother. In agricultural sector techniques such as making of transgenic plants or genetically modified plants. It has been done in many species of plants to enrich their nutrient content and to prevent the crop from various pests and insects. In medical science great discoveries and experiments are performed every now and then. A few examples are like - recombinant insulin, gene therapy, molecular diagnosis, vaccines etc. These all methods are widely used for detection, preventing and treatment of various harmful diseases. Industrial field has also implemented different biotechnological aspects like fermentation of grains with help of microbes for manufacture of wine and beer. Chemical production is also done to make biofuels. Thus, to a great extent biotechnology and its applications have been an integral part of our lives.

Let's Explore with Antibiotics



Ms. Laiba Ekram
B.Sc (H) BT-II

Antibiotics means against living organisms ('anti'-against, 'bio'-living, 'tics'- organisms). Antibiotics are medicines that fight against pathogens in humans and animals. Example: Penicillin, tetracycline, Amoxicillin etc.

Antibiotics can be taken in different ways:

- Orally- Pills, capsules or liquids
- Topically- Creams, sprays or ointments
- Intravenously- Injections

Working Style of Antibiotic: When we take antibiotics orally, it enters our digestive tract and is absorbed into the bloodstream just like nutrients are absorbed from food. From bloodstream the antibiotics circulates throughout the body, and reaches its target region, where the pathogens are causing infection. The antibiotics starts disrupting the pathogen cells. They inhibit pathogen's ability of forming cell wall, blocking its reproduction or interfering with its ability to store and use energy. Thus, the growth of pathogens get hampered through antibiotics.

Side-effect of Antibiotics: One of the most common side-effect from taking antibiotics is diarrhoea (loose bowel movements). This happens because antibiotics disrupts the normal, healthy bacteria in our gut. The use of excessive antibiotics may increase the risk of pathogens becoming resistant to them. Antibiotics such as tetracycline and doxycycline can cause permanent discoloration of teeth. In rare cases, some antibiotics can cause low blood pressure.



Remarkable Discoveries on *Eichhornia crassipes* (Water hyacinth)



Ms. Honey Nishad
B.Tech. BT-II

Water hyacinth is an indigenous monocot aquatic plant of Brazil and Ecuador region of South America, associated with the group of plants called lilies. It is commonly known as Terror of Bengal. It derives its origin from the Amazonia basin in South America and holds the reputation of being one of the most strenuous water weeds to manage. It possess serious challenges to humanity and the environment. Considering the enormity of the menace associated with the growth and spread of the plant and the difficulty in achieving a single, generally acceptable control method, it is becoming increasingly imperative to explore the potentials of the plant.

Researchers showed that a variety of compounds are present in freshwater hyacinth plant. The ethanolic and methanolic extract of water hyacinth revealed the presence of alkaloids, flavonoids, phenols, carbohydrates, proteins, amino acids, tannins, terpenoids, saponins, and glycosides. Apart from this, it comprises of the elements such as C, O, Na, Mg, Al, Zn, K, Ca, Fe, P, S with carbon and oxygen making it a good source of biofuel for feedstock. Its roots often act as Phyto accumulators, whereby the roots absorb toxic pollutants and chemicals at higher concentrations in water bodies.

Water hyacinth has been found to be very good vermicomposting raw material. Mixtures of water hyacinth manufactured into agricultural fertilizers from several forms of animal wastes, plants wastes, house-hold and domestic wastes, etc., are utilized to improve water retention in soils in land-locked areas. The low lignin content present in water hyacinth makes the plant a great choice when sourcing for biomass, as cellulose and hemicellulose are converted with ease to sugar that is fermentable, resulting in greater quantities of biomass that can be exploited in the biofuel industry.

Water hyacinth is also reported to have anti-inflammatory, antifungal, and antibacterial functions. It can be used as a hair fragrance, to treat cholera, sore throat, and snake bites. It was also reported to demonstrate anticancer ability due to the presence of some cancer-fighting compounds. Two dermal creams formulated with ethyl acetate extracts of water hyacinth were analyzed for antiaging properties through DNA damage inhibition and DPPH radical scavenging assays. The larvicidal, antitumor, and wound healing properties are also reported. Its extracts can be made into clinically acceptable solvent and used for the treatment of lipid disorder or for the treatment of patients with fatty liver.



Reduce the Risk of Breast Cancer



Ms. Kumari Muskan
B.Sc (H) BT-II

“Breast Cancer is only a word, not a Life”

It is assessed that 29 million women in our society are at high risk for the development of breast cancer growth. Being female puts each woman a risk for the development of breast cancer. Nonetheless, most of chance happens after the age of 50. Breast cancer is a kind of cancer start when cells begin to grow out of control. It can begin in one or the two breast. Cancer begins when cells start to outgrow control. That's why the women in our society in a conundrum about their options regarding risk reduction, screening and prevention. So, some risk factors, like a family history never be changed but yes there are some prevention start with healthy habits and also the change in lifestyle is helps to reduce the risk of breast cancer.

What we can do to reduce the risk of breast cancer? Consuming alcohol is the greatest risk of development of breast cancer, therefore we should never drink alcohol or take it for small amount. Maintain a healthy weight is also play an important role to reduce the Breast cancer, reduce the number of calories we eat each day and slowly increase the amount of exercise. We should always maintain a healthy weight and always be physically active, which helps to prevent breast cancer. Breast feeding might play a role in breast cancer prevention. Breast feeding may be most successful to in helping mothers to reduce the risk of breast cancer. Limit Postmenopausal hormone therapy. Combination hormone therapy may increase the risk of breast cancer. So, we should talk our doctor about the risk and benefits of hormone therapy as Prevention is better than cure for any of the disease.

Bhopal Gas Tragedy - An Untold Story



Mr. Amritanshu
Shekhar
B.Tech BT-IV

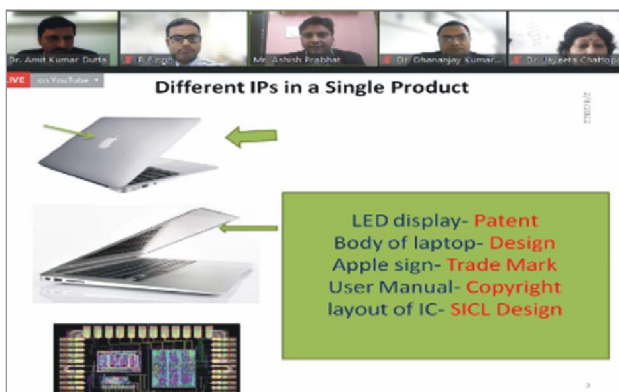
In the midst of the night of 3rd December 1984, 40 tonnes of methyl isocyanate (MIC) which was released from the union carbide plant caused a chaotic and alarming situation in the city of Bhopal. More than 3000 deaths were reported within a week and till date more than half a million case has been encountered for non fatal injuries and serious ailments. Though the incident is now almost 37 years old but the gruesome and scars of the incident still cripples us in the form of mutation which has been carried by the next generation from the parents. The people who have been directly exposed to the gas now inhibits a fewer abnormal cells but the frequency of aberrations within these cells have increased in due course of time. Another severe affect was growth in chromosomal aberrations even in the people who were not Directly exposed or mildly exposed to the gas.

The scholars explain the reason behind this as “A number of confounders, including adaptive lifestyle of the people, environmental factors, nutritional factors, hygienic drinking water, occupational exposures, and inherent genetic conditions interact. Moreover ceaseless contamination of soil by chemical wastes that are dumped in the site of Union Carbide India limited that might have supplemented the genetic changes

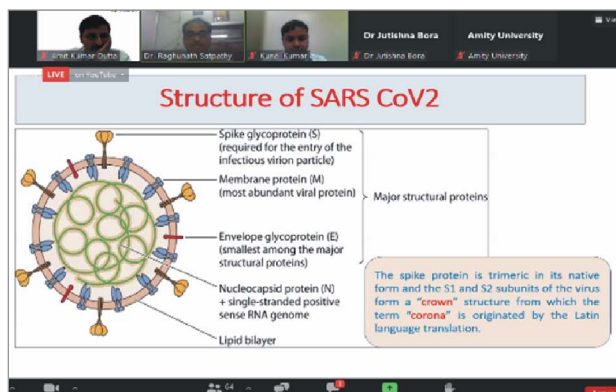
through interaction with other biological and abiological factors”. Even though more than three decades have passed, there is still the question of providing rehabilitation and proper health monitoring to the children who have been born disabled due to the gas tragedy and also to the parents who live in water contaminated areas.

The Chemical Industry and Government needs to properly monitor the maintenance and checkup in regular intervals of chemical technology machineries and refineries running in entire country and a setup is required from the initiative of government to clean the toxic place. It is considered as one of the most dreaded industrial disaster in the world history but the city of Bhopal is still grieving in its pain. A complete new generation born to the one’s who have survived this tragedy has been afflicted and contemplated with birth defects. It would not be wrong to deduce that the surviving generation has inherited the poisoned genes of the Bhopal gas tragedy.

GLIMPSES OF EVENTS



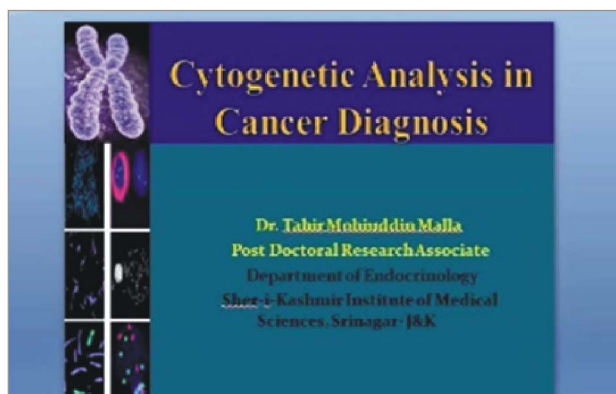
Amity Institute of Biotechnology organized One-Day Workshop on Intellectual Property Rights



Amity Institute of Biotechnology organized Guest Lecture on Application of Bioinformatics Tools and Techniques in Drug Design for SARS-COV-2



Amity Institute of Biotechnology under the Flagship of EAS & JMC Domain celebrated National Science Day 2022



Amity Institute of Biotechnology organized One Day workshop on Cytogenetics Analysis in Cancer Diagnosis

Bio-Rhythms



Amity Institute of Biotechnology with Amity Institute of Information Technology organized One Day Workshop on Prototype - Process Design & Development



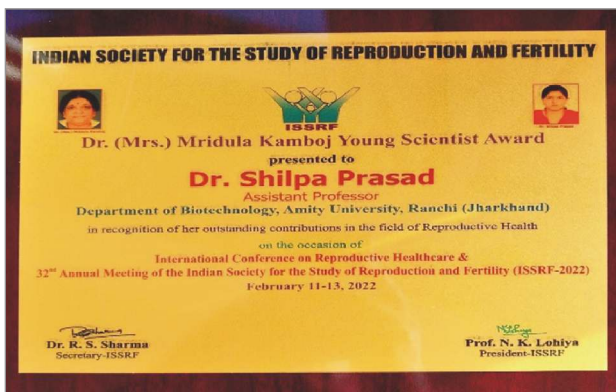
Amity Institute of Biotechnology organized Extension Activity on Importance of Science & Technology for the High School Students



Amity Institute of Biotechnology organized One Day Industrial Tour at ICAR- Indian Institute of Natural Resins & Gums (ICAR-IINRG)



Dr. Sumira Malik, Assistant Professor of AIBN received Research Excellence Award of AUJ from the Hon'ble Governor of Jharkhand



Dr. Shilpa Prasad, Assistant Professor of AIBN received Young Scientist Award 2022

Editorial Team

Editor-in-Chief • Dr. Jutishna Bora

Editorial Members • Dr. Kunal Kumar
• Dr. Shilpa Prasad
• Mr. Amritanshu Shekhar
• Mr. Rohit Kumar Mishra
• Ms. Honey Nishad

Technical Assistant • Mr. Kawish Ateeb