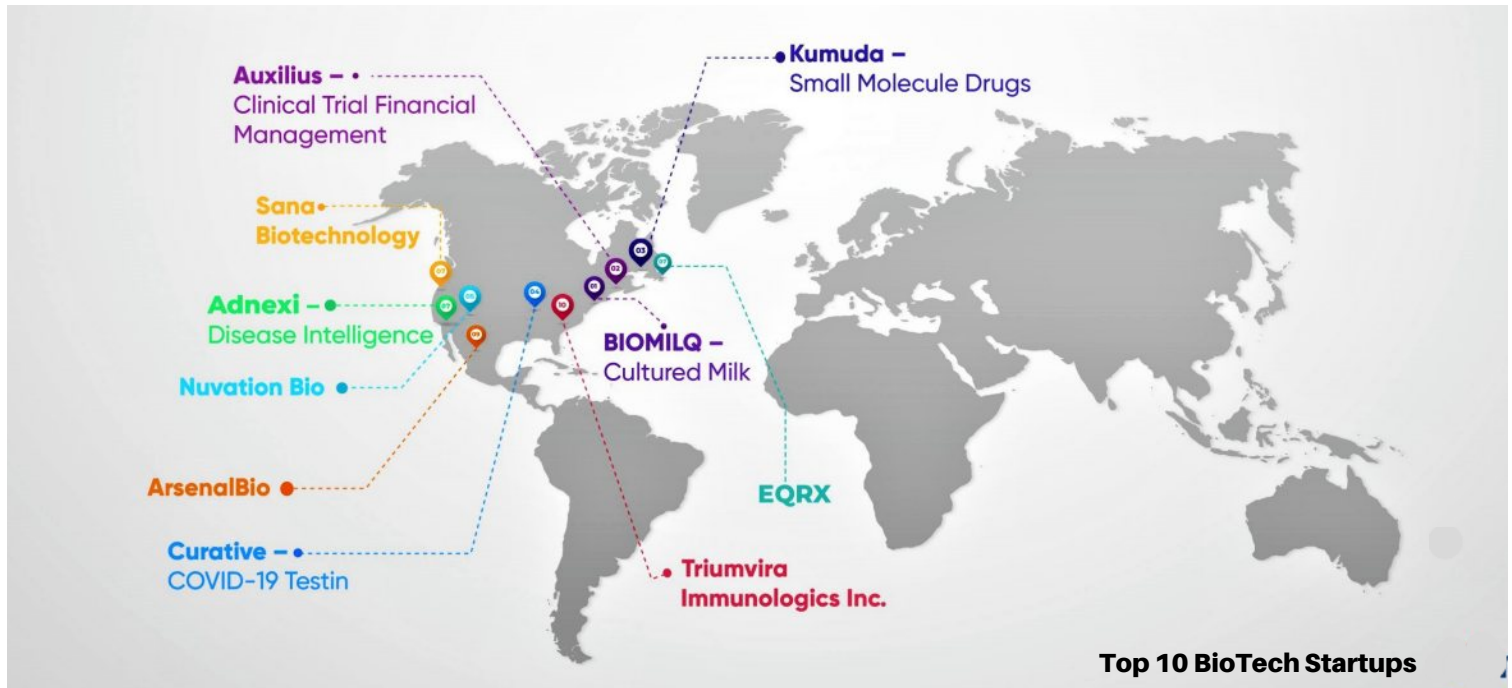


Synapse

OFFICIAL E-NEWSLETTER OF DEPT. OF BIOTECHNOLOGY
RAMA DEVI WOMEN'S UNIVERSITY



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EDITOR'S Desk



Bio-entrepreneurship is an academic powered entrepreneurship as it is driven by science-based innovation. The global biotechnology industry is growing by 120% annually fuelled by myriads of biotech startups stimulated by new clinical trials, small molecule drugs, immunologics and COVID-19 testing. Taking cue, the dept. also organized a skill-based training programme in Bioenterpreneurship. The dept. also started a new series-BIOSPECTRUM, a mode to facilitate biotechnology industry-academia interaction. The academic year ended with significant achievements by our students.

Department Activities

ROSALIND FRANKLIN SEMINAR SERIES

In honor of Rosalind Franklin, the scientist whose research played a critical role in the discovery of the structure of DNA, a seminar series involving various lectures by eminent guest speakers is being conducted by the Dept. of Biotechnology at Rama Devi Women's University since September 2021.



Dr. Shampa M. Ghosh
KIIT school of Biotechnology,
Bhubaneswar



Dr. Subhasis Chattopadhyay
School of Biological Sciences, NISER,
Bhubaneswar

Dr. Ghosh discussed about the evolutionary biology of *Drosophila* and experimental observations regarding the effect of temperature and body length on the evolution of *Drosophila*. A set of four laboratory populations of *D. melanogaster* for rapid development for over 300 generations (FEJ1) and their four matched ancestral control populations (JB1) were studied. The reproductive isolation was tested between the selected populations and their ancestral controls, and evidence was found for the presence of two complementary asymmetric pre and post mating barriers to prevent effective reproduction between selected and control population. Selection has led to great reduction in body size in the fast-developing lines. Dr. Ghosh also discussed the experimental findings about the phenomenon of temperature size rule. In *Drosophila melanogaster*, temperature affects body size primarily by affecting critical size; at this point of development the larvae initiate the hormonal cascade that stops growth and starts metamorphosis. The thermal plasticity of critical size explains the effect of temperature on overall body size.

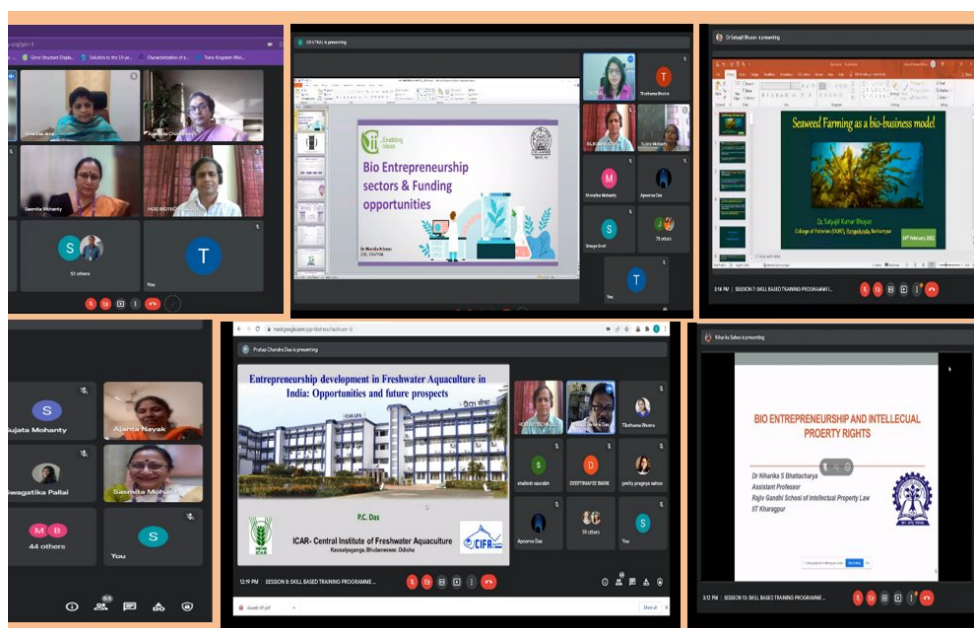
Dr. Chattopadhyay spoke about the evolution of the immune system in organisms to respond efficiently to infections, gave an outline of immunology, the basic difference between innate immunity and adaptive immunity and the four main criteria in adaptive immunity such as antigenic specificity, diversity, immunologic memory and self/non-self recognition. Dr. Chattopadhyay discussed about cellular function and phenotypes associated to cell mediated immunity (CMI) of T cells, the expression and function of Toll like receptors (TLR) and Transient Receptor Potential (TRP) channels in CMI, cellular and immunological responses of host cells during Chikungunya virus (CHIKV) infection and the endogenous functional expression of TLR4 in naive mice T cells during TCR and mitogenic stimulation in presence of VIPER peptide (VP), an established inhibitor of TLR4 signalling. It was found that TLR4 expression goes down during TCR and mitogenic activation and VP treatment restores TLR4 expression on those activated T cells.

Skill Based Training Programme in Bio-entrepreneurship

Department of Biotechnology organized a ten-day Skill Based Training Programme in Bio-entrepreneurship from 7th -17th February 2022 in virtual mode. The training programme focused on role of Bio-entrepreneurship in a global stage and about its current state in India, expected growth, various funding agencies and schemes which will help to promote the conversion of academic research to enterprise including Dept. of Biotechnology, Govt. of India, Biotechnology Industry Research Assistance Council (BIRAC) and Students Innovations for Translation & Advancement of Research Explorations (SITARE) Scheme (aimed at supporting innovative student projects in the area of biotechnology). The programme highlighted how creative ideas and innovations can transform floriculture, mushroom cultivation, vermicomposting, seaweed farming, freshwater pearl cultivation, aquaculture and apiculture into successful bio business models. The importance of intellectual property rights (IPR) in protecting one's innovation was also discussed. By delving deeper into the current scenario of Bioeconomy in India, we got to know that India is the third largest Biotech destination in the Asia Pacific region and USD 11.6 billion Biotech revenue has been generated till 2018.

BIOSPECTRUM : The Biotechnology Industry Interaction Series

Department of Biotechnology organized a four-day Biotechnology Industry Interaction Series from 14th -18th February 2022. The event had two speakers Dr. Neera Singh, Founder & CEO of ProCyto Labs Pvt. Ltd., KIIT-Technology Business Incubator and Aman Abhishek, National Business Manager, Bio world, Bangalore. The speakers discussed and interacted with the students about the importance of Bio-entrepreneurship, process of setting a Biotech start-up, challenges face, Marketing and Product Management in Biotechnology and translating research into valuable products and services for accelerated commercial development of Biotechnology. The meaning of Bio-entrepreneurship, Need/importance ,



Skill Based Training Programme in Bio-entrepreneurship

3rd National Conference on 'Realigning Indian Agriculture for a Sustainable Future' (5F Farming 2022)



Prof. Aparajita Chowdhury, Hon'ble Vice Chancellor, Rama Devi Women's University, Bhubaneswar, Prof. Sasmita Mohanty, Chairperson, PG Council, RDWU, Dr. Raj Kumar Joshi, Head, Biotechnology, RDWU along with faculty members at the "5F Farming 2022"

Promotion of entrepreneurship, Factors affecting Bio-entrepreneurship and features of a successful entrepreneurship were discussed. Any idea based on biotechnology business of utilizing ideas and innovations of biological sciences is called Bio-entrepreneurship which acts as a bridge of innovation connecting academia to industry. India is among the top 12 destinations for biotechnology worldwide comprising around 5000 biotech companies, 4,240 being start-ups and 760 core biotech companies. Small Industries Development Organization (SIDO), The Entrepreneurship Development Institute of India (EDI), BIRAC/BIG schemes are various funding schemes to stimulate bio-business activity. Product management, marketing mix, marketing research, surveys, stock management, global firms and selection of the correct product and market for creating a bio business model based on demographic, geographical and economic factors are major components of Bio-entrepreneurship.

Foundation for Advanced Training in Plant Breeding (ATPBR) in association with Rama Devi Women's University, School of Biotechnology, KIIT University, Institute of Life Sciences (ILS) and Odisha University of Agriculture & Technology (OUAT) organised an offline national conference on 10, 11, and 12th of March 2022 entitled "5F FARMING – Realigning Indian Agriculture for a Sustainable Future". The venue of the conference was campus XI, KIIT University. Many renowned Scientists and entrepreneurs across India graced the occasion with their presence. Speakers from all over the world participated in the 2-day 5F farming conference to discuss various facets of modern agriculture towards sustainable management. The conference highlighted on comprehensive integration of cutting-edge science and precision technology required for the sustainability and tapping full potential

of agriculture stake holders, recent developments in enabling technologies that are needed to realign agriculture for primary production, value addition and targeted marketing strategies of the products to increase profitability to the farmers and attract talented and dynamic youth to join the work force of agriculture. Experts also discussed the marketing related challenges faced by the grower and formulated the strategies to strengthen policies favouring secondary agriculture development in India. The conference provided a perfect platform for scientists and the array of policy reforms required to support agriculture, input and output value chains, and remunerative markets for farmers to ensure national food and nutrition security. The conference was attended by 53 Scientists/Faculty/Members of industry, 37 Ph.D. Scholars and 158 students.

Achievements

STUDENT ACHIEVEMENTS

- PhD Research Scholar Miss Bijayalaxmi Mahanty has won 2nd Prize in Poster Competition in The International Conference on Bioresources of Our Environment : Utilization and Conservation (ICBEUC) organised by Centurion University on 28th-30th March 2022.

- PhD Research Scholars Miss Shubhranshee Sanshlishtha Sahu, Miss Tamarapalli Sravya Sruti and Miss Richa Sharma have won 3rd Prize in Agri-Quiz Competition in the 3rd National Conference on Realigning Indian Agriculture For A Sustainable Future (5farming) organised By KIIT University On 10th -12th March.



Team Rama Devi Women's University won the third prize in the Agri-Quiz event held during "5F Farming 2022"

- 10 Students from B.Sc. (Batch 2017-20, 2018-21) and M.Sc. (Batch 2019-21) have qualified various national level entrance exams such as IIT JAM, GATE and CSIR Net LS In 2022.

- The M.Sc. Students (Batch 2020-2022) were selected in national institutes like CSIR - IMMT, Bhubaneswar, CIFA, Bhubaneswar, Regional Medical Research Centre, Bhubaneswar for their 6-months dissertation program.

Science Stories

The 10 most innovative biotech companies in 2022

The most innovative companies in biotech this year expand R&D capabilities for researchers in the lab and online, enable more precise and inclusive diagnostic tests, and offer new paradigms for everything from drug development to the maintenance of healthy soils for agriculture. Biotech companies such as Strata Oncology, TMRW Life Sciences, and DNA Script are breaking new ground in cancer detection, IVF storage, DNA synthesis, and more. DNA Script employs a new process called enzymatic DNA synthesis (EDS) in its benchtop DNA printers, allowing scientists to create longer strands of DNA than traditional DNA synthesis on demand.

TMRW Life Sciences is modernizing the IVF clinic with an automated, robotic platform for safe storage and efficient retrieval of frozen eggs and embryos.

Notable advances in diagnosing cancer and guiding treatments come from Strata Oncology, which launched a new assay for solid tumors that requires significantly smaller tissue samples for genomic profiling, and Myriad, which updated its genetic test for breast cancer risk to include risk assessments for more diverse populations. LightDeck and SafeTraces developed new ways of quickly detecting COVID-19 and other pathogens in patient samples or circulating through large buildings. Bringing a portfolio model to its diverse drug-development program, BridgeBio Pharma attained two FDA approvals for new drugs last year, making it the smallest drugmaker to earn more than one nod from the agency.

For more details, go to : <https://www.fastcompany.com/90724370/most-innovative-companies-biotech-2022>

Tomato Flu: The flu that has put health officials on high alert

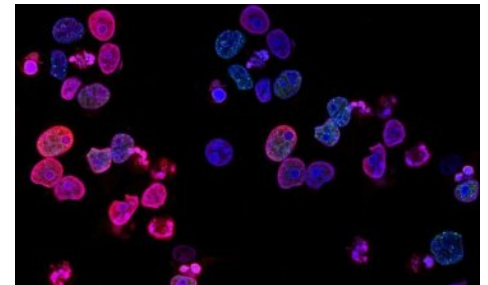
Tamil Nadu has ramped up surveillance at its borders in the wake of “tomato flu” cases being detected in Kerala. The flu that gets its name because of the red blister it causes, has raised concern in Coimbatore.

Dr P Aruna, the deputy director of health services, Coimbatore, told The Indian Express, “Three teams comprising revenue inspectors, health inspectors and police have been deployed on a shift basis. They will note down if someone has fever and rashes.”

For more details, go to : <https://indianexpress.com/article/explained/what-is-tomato-flu-who-does-it-affect-7911890/>

Genetic Mutations Can Be Benign or Cancerous—a New Method to Differentiate Between Them Could Lead to Better Treatments

Most of the roughly 40 trillion cells of your body have nearly identical copies of your genome—the DNA inherited from your parents, containing instructions for everything from converting food to energy to fighting off infections. Healthy cells become cancerous through harmful mutations in the genome.



Source : National Cancer Institute, created by Yves Pommier, Rozenn Josse

If a cell’s genome is damaged by ultraviolet light, for example, it can result in mutations that tell the cell to grow uncontrollably and form a tumor.

Identifying the genetic changes that cause healthy cells to become malignant can help doctors select therapies that specifically target the tumor. For example, about 25 percent of breast cancers are HER2-positive, meaning the cells in this type of tumor have mutations that cause them to produce more of a protein called HER2 that helps them grow. Treatments that specifically target HER2 have dramatically increased survival rates for this type of breast cancer.

For more details, go to : <https://www.the-scientist.com/news-opinion/genetic-mutations-can-be-benign-or-cancerous-a-new-method-to-differentiate-between-them-could-lead-to-better-treatments-70077>

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