BIOBYTES

DEPARTMENT OF BIOTECHNOLOGY

Parvatibai Chowgule College of Arts & Science Autonomous

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HIGHLIGHTS

- Faculty & student achievements
- Project findings of 2020-21
- Alumni talk series

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EDITORIAL

As the current pandemic situation seems to be getting better with passing time, let's pray and hope that we achieve the 'pre-COVID era', wherein everything seemed to be fine in this world as early as possible. Just to provide a short distraction from the current state of affairs, we bring to you the last departmental newsletter of this academic year 2020-2021.

We are delighted to share with you'll a few of the faculty's and students achievements. Also, in this newsletter, you will find a brief report on the project findings of our final year B.Sc. Biotechnology students of the academic year 2020-2021.

Lastly, our very own Biotechnology club-"Biochrome' organised a series of talks given by the alumni of our department to facilitate our current batch of students in choosing a right career option. Happy reading!

- By, Dr. Starlaine Mascarenhas, Assistant Professor in the Department of Biotechnology

FACULTY ACTIVITIES

❑ **Dr.R Kanchana, HOD and Asst. Prof. in Biotechnology participated in the following:**

- 1) An international webinar on "Opportunities & Entrepreneurship in Hydroponics" organized by Don Bosco College of Agriculture, Quepem, Goa on 15th April 2021.
- A National Online Webinar on 'Transformation through NAAC Accreditation Process, A National Level Workshop for Higher Educational Institutions' held on 21st & 22nd June 2021 conducted by Institute for Academic Excellence, Hyderabad in collaboration with Collegiate Education & Technical Education Department, Telangana State.

❑ **Ms. Madhavi M. Motankar, Asst. Prof. in Biotechnology completed the following;**

- Fifteen hours National Masterclass on 'Intellectual Property Rights & Patent Facilitation' organized by IIC MIT-ADT University, AIC-MITADTU Incubator Forum, supported by NITI Aayog from 8th-10th May 2021.
- AICTE Training and Learning (ATAL) Academy Online Elementary Faculty Development Program on 'Academic Leadership in Higher Education' from 17th to 21st May 2021 at Central University of Rajasthan.
- Seven days International Virtual Faculty Development Program' organized by Ph.D. Research Centre of Pillai College of Arts, Commerce and Science (Autonomous) in Association with Millennium University, Malavi, South Africa as per the regulations of minimum standards course work required for M. Phil/ Ph.D. Programmes and CAS from 26th May to 1st June 2021.

❑ **Dr. Starlaine Mascarenhas, Asst. Prof. in Biotechnology completed the following**

- AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme (FDP) on 'Transgene Technologies' from 21st to 25th June 2021 at Bharath Institute of Higher Education and Research
- AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme (FDP) on 'Green Technology and Sustainability Management' from 1st to 5th July 2021 at Engineering College Bikaner.
- Attended the on National Webinar on "Mucormycosis: 'The black fungus' traumatizing COVID-19 patients in India", organized by the Department of Microbiology, Government College of Arts, Science and Commerce, Khandola, Goa in collaboration with Microbiologists society, India on 5th June 2021.
- Participated in the national talk series (seminar series) entitled 'La Biologie Know and Learn Biology' jointly organized by Department of Botany & Zoology, JECRC University, Jaipur, Rajasthan on 10th June 2021.
- Participated in National webinar on "Conservation of Nature- A way of life" to celebrate World Nature Conservation Day organized by the Department of Botany of Dhempe College of Arts and Science on 28th July 2021.

- By, Dr.R.Kanchana, Ms. Madhavi M. Motankar & Dr. Starlaine Mascarenhas; Assistant Professors in the Department of Biotechnology

STUDENTS ACTIVITIES

The final year (T.Y) B.Sc. Biotechnology students are required to complete a dissertation project as a part of the curriculum. Presenting here, a brief report of the various project work carried out by the students with the final outcome as follows;

PROJECT 1: Production of bio-ethanol from cellulosic wastes

This project was carried out by Atharva Karde, Bhomkar Shreesiddhi Vinod, Coutinho Simran Bertina, Gadiyar Manjunatha Manojkumar, Gaonkar Bhargavi Laxmikant, Kamat Kaushiki Krishna, Kamat Saishree Pratap, Kate Mel Cabral, Raikar Mrugnayni Mahesh, Rutuja R. Shirodkar under the guidance of Dr. Starlaine Mascarenhas.

In recent years paper has become a severe problem for disposal in developed and developing countries due to the shrinking landfill capacity. Paper, which is a cellulosic feedstock, is emerging as an attractive option for the production of bio-ethanol mainly because of lower feedstock costs, higher potential for fossil fuel displacement and due to reduction in greenhouse gas emissions. The main objective of this project is the production of bioethanol from tissue paper. Experimental studies were carried out by following mainly 3 steps that involved pre-treatment, hydrolysis and fermentation for the production of bioethanol. Pre-treatment is required to remove the lignin and hemicellulose to enhance the process of hydrolysis. Hydrolysis was carried out using 2 methods namely enzymatic hydrolysis and acid hydrolysis. The reducing sugars were then fermented to produce Bioethanol using the yeast (Saccharomyces cerevisiae) and the yield was estimated using 3 methods after distillation. Upon overall comparison of the results obtained it was found that the acid hydrolysis method was the most efficient for the fermentation of paper to obtain ethanol as The acid hydrolysis method was found to have the maximum yield of ethanol according to all three methods used for the estimation of ethanol.

Fig. L-R: .Enzymatic hydrolysis treatment of cellulosic substrate i.e.tissue paper and Distillation of the substrate slurry after anaerobic fermentation for production of bioethanol

-By, Dr. Starlaine Mascarenhas, Assistant Professor in the Department of Biotechnology

PROJECT 2: A Comparative Analysis on different methods of Organic Farming

This project was carried out by Maria Scimran Blossom Da Costa, Vedika Vivek Phal, Ashney Tresa Rodrigues, Selcea Savia D'costa , Russell Malcolm Fernandes ,Melvia Fernandes ,Priyanka Shanke ,Samradny Narayan Phadte, Manasi Pramod Pendseunder the guidance of Ms.Vallanka Dias

In this project, comparisons were drawn between the two methods of hydroponic organic farming (Aquaponics and aeroponics) with respect to setup costs, plant growth and other factors. Chilli, moong and lady fingers seedlings were the chosen candidates for this study, with germination rates being compared between 2 methods along with their growth rate in both setups as well as control(soil). Water qualities in terms of TSS & TDS were also compared, and some light was shed on potential problems one might encounter while setting up an aquaponics & aeroponics system.

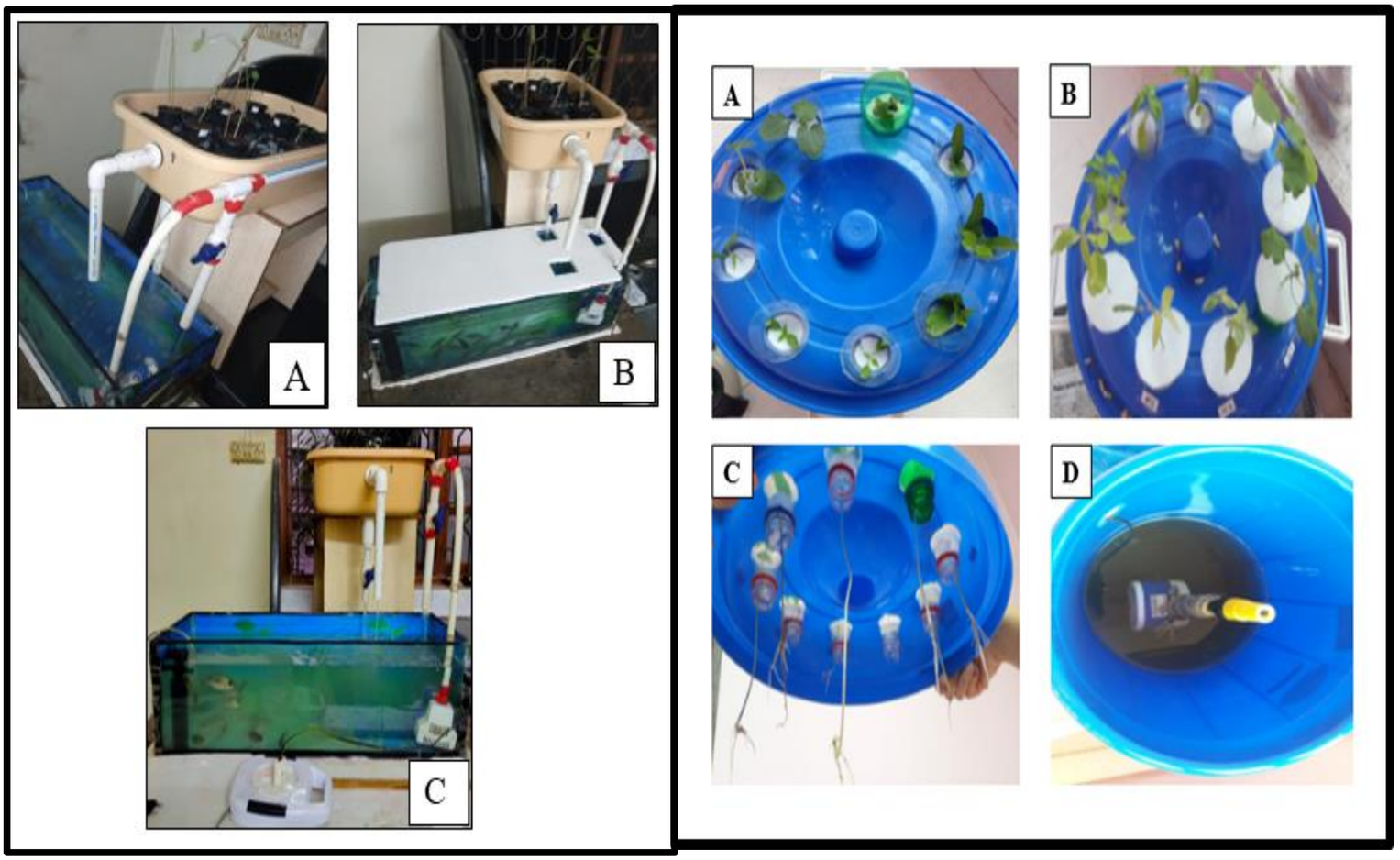


Fig.L-R: .Aquaponics set up from different angles (A) Top view (B) Front view (C)Side view and Aeroponics system on (A) Day 0 (B) Day 46 (C) Plant Roots growing in the Aeroponics system (D) Pump and Nutrient solution in the Aeroponics system

-By, Ms.Vallanka Dias, Assistant Professor in the Department of Biotechnology

PROJECT 3: Evaluation of different grains for spawn production of oyster mushrooms

This project was carried out by Amanda Delilah Vaz, Devika Raghuraj Arsekar, Prajay Yatin Prabhu Chodnekar, Pranjal Shamprasad Kalekar, Kimberly Rhea Fernandes, Denisha D. Mangaonkar, Rhea Marissa D'souza & Indrajit Giriraj Kallali under the guidance of Ms. Hashma Mujawar

Oyster mushrooms, the common name for the species Pleurotus ostreatus, are quite possibly the most well-known kinds of cultivated mushrooms. Oyster mushrooms contain a number of substances thought to influence health.The main objective of the current study was to evaluate and do a comparative study of different grains that can be used to produce oyster mushroom spawn. Spawn is pure culture of mycelium, growing on solid medium such as grains. Five different grains i.e., rye, wheat, sorghum, corn, rice, and millet were used to know the effect of spawn development of oyster mushrooms. The second objective was to utilise the developed spawn to cultivate oyster mushrooms and evaluate the growth of spawn. Paddy straw was used to cultivate mushrooms.

The method for oyster mushroom development can be partitioned into four stages: preparation or procurement of spawn, substrate preparation using a hot water treatment, spawning of the substrate, and crop management. Among the six-grain substrate; rye showed fast formation compared to all the grains, which was then followed by sorghum. The spawn was then grown on paddy straw substrate. Maximum yield was obtained in the first flush with spawn grown on rye, rice and sorghum.

It is an established fact that mushrooms are excellent sources of vitamins and minerals. In view of their high food value to men and their medicinal properties, these mushrooms can help in solving the problems of malnutrition and diseases thus benefiting people in the long run.

Fig.L-R: . Sorghum showing mycelium growth and Spawn developed on rye followef by cultivation on hay, showing mushroom growth

-By, Ms.Hashma Mujawar, Assistant Professor in the Department of Biotechnology

STUDENTS ACHIEVEMENTS

The following students have made us proud by securing good ranks for entrance exams conducted at Goa university and Nirma university for the Master's in Biotechnology and Food Biotechnology programmes. Congratulations to all!!.

Student ranks for M.Sc in Biotechnology at Goa university

Mr.Atharva Karde

Rank No.-3

Ms,Saishree Kamat

Rank No.-6

Ms. Selcea D'costa

Rank No.-9

Ms.Samradny Phadte

Rank No-11

Shreesiddhi Bhomkar

Rank No-18

Ms.Manasi Pendse

Rank No.-23

Ms.Mrugnayni Raikar

Rank No.-24

Ms.Melvia Fernandes

Rank No.- 36

Ms.Rhea D'souza

Rank No.-37

Ms,Priyanka Shanke

Rank No.-47

Ms.Kaushiki Kamat

Rank No.-51

Ms.Bhargavi Gaonkar

Rank No.-52

Ms.Scimran Da Costa

Rank No.-68

Students Ranks for M.Sc in Food Biotechnology at Goa university

Ms.Devika Arsekar

Rank No-15

Ms.Pranjal Kalekar

Rank No-64

Students Ranks for M.Sc in Biotechnology at Nirma university

Mr. Indrajiti Kollali

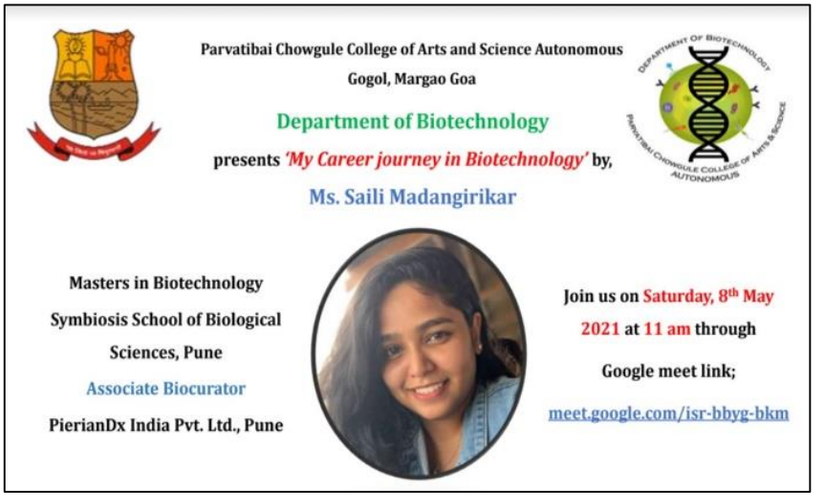
Rank No.-10

-By, Dr.Starlaine Mascarenhas, Assistant Professor in the Department of Biotechnology

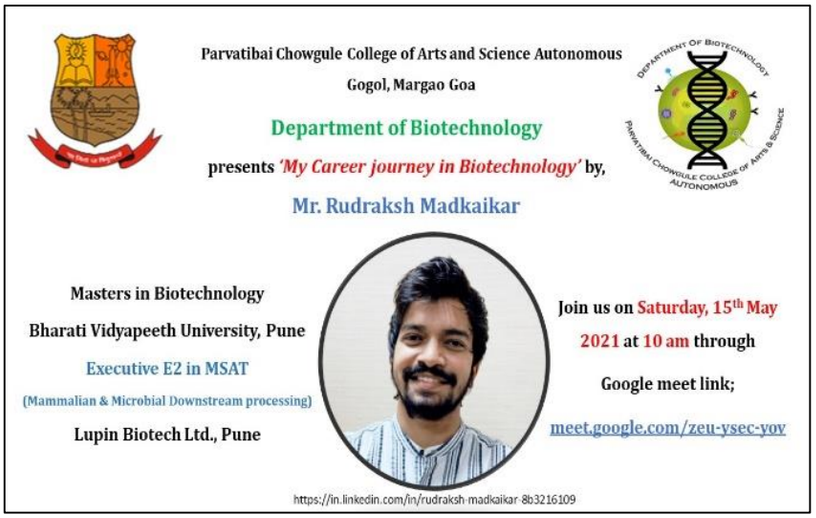
BIOCHROME - BIOTECHNOLOGY CLUB ACTIVITIES

On behalf of the Department of Biotechnology, Ms. Madhavi M. Motankar, Faculty in Biotechnology and Coordinator of Biochrome, organized two webinars as a part of the previously organized Alumni Talk Series for the Life Sciences students of our college through Google meet on 'My Career journey in Biotechnology' by:

1. Ms. Saili Madangirikar, Masters in Biotechnology from Symbiosis School of Biological Sciences, Pune presently working as an Associate Biocurator at PierianDx Pvt. Ltd., Pune on 8th May 2021.



2. Ms. Rudraksh Madkaikar, Masters in Biotechnology, Bharati Vidyapeeth University, Pune presently working as an Executive E2 in MSAT Mammalian & Microbial Downstream processing at Lupin Biotech Ltd., Pune on 15th May 2021.



-- Organized by, Ms. Madhavi M. Motankar, Asst. Prof. in Biotech & Co-ordinator of Biochrome

Editor: Dr. Starlaine Mascarenhas, Assistant Professor in the Department of Biotechnology

Reports and pictures of the project activities contributed by Dr.R.Kanchana, Ms. Madhavi M. Motankar, Dr. Starlaine Mascarenhas, Ms. Hashma Mujawar and Ms. Vallanka Dias (Faculty of the Department of Biotechnology)