

# DEPARTMENT OF INDUSTRIAL MICROBIOLOGY

## **ACHIEVEMENTS**

**2020-21**

- A Laminar Air Flow (LAF) model was constructed for the study purpose by the final year B.Sc. III Industrial Microbiology students.
- An online National webinar on Green energy and sustainable development was organized by Internal Quality Assurance Cell of the College & Faculty of Sciences including Department of Industrial Microbiology from 10th-15th May 2021.  
**Title:** National webinar on Green energy and sustainable development  
**No. of Participants:** 100  
**Date:** 10th-15th May 2021
- Delivered a talk on History and Development of vaccines in Online Covid-19 Vaccination Awareness Programme organized by Red Cross Society, Red Ribbon Club And NSS Unit of Indira Gandhi Govt Arts and Commerce PG College, Vaishali Nagar, Bhilai (C.G).  
**Title:** History of vaccine development  
**Date:** 28th May 2021  
**Total No. of Participants:** 66
- The department organized online quiz competition and project exhibition for all the students from science discipline during National Science Day 2021 Celebration based on 2021's theme: Future of Science, Technology, and Innovation: Impacts on Education, Skills, and Work.

### **Winners of Online Quiz competition 2021**

<b>Winners</b>	<b>Name</b>	<b>Subjects</b>
<b>1<sup>st</sup> Prize</b>	Baby Rai	B.Sc. I yr Industrial Microbiology
	Fiza Quraishi	B.Sc. I yr Industrial Microbiology
<b>2<sup>nd</sup> Prize</b>	Minal Lac	B.Sc. IyrBiology
<b>3<sup>rd</sup> Prize</b>	Aafreen Hussain	B.Sc. I yr Biology
	Bhumika Jain	B.Sc. IIIyr Industrial Microbiology
	Shrishti Mishra	B.Sc. IIIyr Industrial Microbiology
	Shweta Maurya	B.Sc. III yr Industrial Microbiology
	Durga Nishad	B.Sc. III yr Biology
	Payal Dewangan	M.Sc. I Sem Chemistry

### Winners of Science Project Exhibition 2021

Winners	B.Sc. I Industrial Microbiology	B.Sc. II Industrial Microbiology	B.Sc. III Industrial Microbiology
1 <sup>st</sup> Prize	Baby Rai	Jyoti Singh	Bhumika Jain
2 <sup>nd</sup> Prize	Fiza Quraishi	Durga Yadav	Shristi Mishra & Seema Nishad
3 <sup>rd</sup> Prize	Poonam Markande	Swati Khatri & Shweta Lilhare	Shweta Maurya & Kajal Dewangan

- The department has initiated online teaching/learning through various online platform during pandemic COVID times. The faculty from department of Industrial microbiology has uploaded video lectures/Study materials (PDF) in the college webpage of Indira Gandhi Govt PG College, Vaishali Nagar.

<http://ocm.iggcv.com/FacultyProfile.aspx?fid=GHCByL2laC0Ebc191o15eg==>)

- The faculty has also uploaded theory and practical video lectures in YouTube:

Topics	link
General and specific qualitative test for carbohydrates	<a href="https://youtu.be/TCz5R_k-ls0">https://youtu.be/TCz5R_k-ls0</a>
Determination of bacteria growth by optical density measurement	<a href="https://youtu.be/cLpFepUGo0w">https://youtu.be/cLpFepUGo0w</a>
Measurement of microorganism using Camera Lucida	<a href="https://youtu.be/oT0MYJT4s4">https://youtu.be/oT0MYJT4s4</a>
Simple and Differential Staining techniques	<a href="https://youtu.be/Jkad_hKBAbg">https://youtu.be/Jkad_hKBAbg</a>
Enumeration of bacterial population in a given sample by serial dilution technique	<a href="https://youtu.be/ocg7er5feRo">https://youtu.be/ocg7er5feRo</a>
Isolation of single colonies on solid media	<a href="https://youtu.be/MEL7GkpMQac">https://youtu.be/MEL7GkpMQac</a>
Preparation of Solid/Liquid culture media	<a href="https://youtu.be/bdhorlAbaO4">https://youtu.be/bdhorlAbaO4</a>
Brief information about Autoclave, Hot Air Oven, Laminar Air Flow and other instruments	<a href="https://youtu.be/fvIFhrZg3_Q">https://youtu.be/fvIFhrZg3_Q</a>
Fermentation Processes:SSF and SmF	<a href="https://youtu.be/q1Sexo9u3ts">https://youtu.be/q1Sexo9u3ts</a>
Fermentation Processes	<a href="https://youtu.be/p2nd-txy5Wk">https://youtu.be/p2nd-txy5Wk</a>
Bioreactors part 1	<a href="https://youtu.be/57OMkzuA0NQ">https://youtu.be/57OMkzuA0NQ</a>
Brief history and development of Industrial Microbiology	<a href="https://youtu.be/xFJoMKoUmWc">https://youtu.be/xFJoMKoUmWc</a>
Brief history and development of Industrial Microbiology part 2	<a href="https://youtu.be/6SOorFTTmJf4">https://youtu.be/6SOorFTTmJf4</a>

- The faculty has also uploaded study materials in Chhattisgarh Govt website (cgschool.in) for college students during COVID times

Topic	link
DNA Repair and its mechanism: Various types of Restriction enzymes, dam and dcm methylases	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Food spoilage and food borne infections	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Biodegradation of Xenobiotics	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
General concept of industrial microbiology and their applications	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Biodegradation of Industrial waste	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Mushroom	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Regulation of gene expression	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Bacteriophage, lytic vs lysogenic phages	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
Bacterial Plasmids	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>
VAM and its importance	<a href="https://cgschool.in/Teacher/MyUploads.aspx">https://cgschool.in/Teacher/MyUploads.aspx</a>

#### **Guest lecture was organized**

- An online talk was delivered by Dr. Rahul Kumar (Post-Doctoral Researcher) from National Institute of Plant Genome Research (NIPGR), New Delhi on 07th Dec 2020 on the topic “Molecular Cloning and its application”. The students from the Department of Industrial Microbiology, Govt. P.G. College, Vaishali Nagar learnt the basics of cloning techniques and its application in the study of plant pathogens. Dr. Rahul Kumar also explained the functions of DNA and its isolation techniques.

Title: Molecular cloning and its application

Date: 07th Dec 2020

No. of participants: 12

#### **Webinar**

- Indira Gandhi Government Arts & Commerce PG College, Bilai Carrier guidance and placement cell in association with Industrial Microbiology Department has jointly organized a Webinar on Intellectual Property Rights: Patenting in India on 12<sup>th</sup> June 2021.

**Title:** Intellectual Property Rights: Patenting in India

**Date of the Programme:** 12<sup>th</sup> June 2021

**No. of Participants:** 48

- Preparation of a project report is a part of the curriculum of B.Sc III Industrial Microbiology. This helps them to get a deep insight into the topic and help in better understanding. The exercise was also helpful in encouraging our students to pursue entrepreneurial journey for the creation of affordable and nutritious food products for the human diet. Students reported varieties of mushroom available in worldwide and different methods of mushroom production.
- The pass percentage of B.Sc. Industrial Microbiology students for the session 2020-21 was found to be 100%.
- A book chapter is published: Dark Fermentative Hydrogen Production from Lignocellulosic Agro-waste by a Newly Isolated Bacteria Staphylococcus Epidermidis B-6. P Mazumder, D Nath, **AK Manhar**, K Gupta, D Saikia, M Mandal. Resilience, Response, and Risk in Water Systems, 381-395.
- An Add on course (30hrs) in Life Science was organized by the Industrial Microbiology Department in association with Life Science Club of the College for the students of non-medical courses such as Maths, Arts and Commerce aspiring for competitive exams.

#### 2019-20

- The training program on mushroom production was organized by Department of Industrial Microbiology and conducted at KVK, Rajnandgaon on 31st January, 2020. There were 28 students participated in the training program on mushroom production. The Scientific officer, Mr. Jitendra Meshram Sir introduced us to various department including poultry farm, botanical garden, pulses agriculture field and fisheries. The training program was also helpful in encouraging our students to pursue entrepreneurial journey for the creation of affordable and nutritious food products for the human diet.
- **Invited for a talk**  
A talk was delivered by Dr. Ajay Kumar Manhar, HoD, Department of Industrial Microbiology on 5<sup>th</sup> Nov 2019 on the topic: “Culture Techniques in plant pathology” at the Department of Botany, Govt. P.G. College, Vaishali Nagar. The students learnt the different methods of culture techniques and the applications of Gram Staining technique for the differentiation of bacterial group under Gram Positive and Gram Negative bacteria.
- The pass percentage of B.Sc Industrial Microbiology students for the session 2019-20 was found to be 100%.

## 2018-19

- **Guest Lecture Organized by the Department of Industrial Microbiology, Govt. P.G. College, Vaishali Nagar.**

A guest lecture was delivered by Dr. Meenakshi Bharadwaj Ma'am on 18th Jan 2019 on the topic "Fungi and its Characteristics" at the Department of Industrial Microbiology, Govt. P.G. College, Vaishali Nagar. The students learnt the characteristics and classification of Fungi. The students also observed the Rhizopus sp. isolated from spoiled food source under microscope.

- Industrial visit to BEC Foods, Kuthrel (Durg) on 29th Dec was organized by the department of Industrial Microbiology. The purpose of this visit was to provide an exposure to students about practical working environment and enhance their knowledge. It was also helpful in encouraging our students to pursue entrepreneurial journey for the creation of affordable food products addressing the needs of society.
- Published a research paper: Inhibition of *Staphylococcus aureus* and *Pseudomonas aeruginosa* Biofilm and Virulence by Active Fraction of *Syzygium cumini* (L.) Skeels Leaf Extract: In-Vitro K Gupta, SP Singh, **AK Manhar**, D Saikia, ND Namsa, BK Konwar, M Mandal. Indian journal of microbiology 59 (1), 13-21, 2018.
- The pass percentage of B.Sc. Industrial Microbiology students for the session 2018-19 was found to be 100%.