DEPARTMENT OF MICROBIOLOGY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG

Internship
At
Central India Institute of Medical Sciences (CIIMS) Nagpur
on
"Molecular Techniques"
(25.12.2023 to 30.12.2023)

The PG students of Microbiology Completed their 06 Days onsite Internship at Central India Institute of Medical Sciences (CIIMS) Nagpur on Molecular techniques. The funds provided by PM-USHA scheme has been instrumental in ensuring a robust and enriching internship experience of the students.

Altogether, 15 students of M.Sc. Sem III Microbiology completed the internship at advanced instrumentation lab of CIIMS, Nagpur.

S. No.	Name of Student	S. No.	Name of Student
1	Anisha	9	Monisha
2	Danish Vinod Patil	10	Pragya Sakhare
3	Esha Nag	11	Sanket Kumar
4	Falita Kunjam	12	Saroj
5	Kajal Dhritlahare	13	Uzma Khatoon
6	Kedarnath	14	Vandana Sidar
7	Madhvi Sahu	15	Vani Thakur
8	Mansi Shrivastava		

Brief Report

Introduction:

The purpose of the internship in molecular techniques was to provide valuable hands-on experience to students and to create way to reaching out to research labs, biotech companies or academic institutions. This also offer to investigate into the fascinating realm of molecular techniques, motivation to pursue further education and research in molecular biology.

Technical support provided by:

1	Dr. Rajpal Singh Kashyap; Director Research, CIIMS, Nagpur
2	Dr. Amit Nayak; Scientist, CIIMS, Nagpur
3	Dr. Ali Abbas Husain; Scientist, CIIMS, Nagpur
4	Roshni Sharma; HR, CIIMS, Nagpur

5	Jayshree, Prachi, Riddhi, Sneha; Research Scholars

Objectives:

- Basics of Molecular Biology
- Methods of Nucleic acid extraction (DNA/RNA) from different body fluids
- PCR and its downstream applications
- Targeting the 16s universal gene for bacterial and viral infections
- Real time PCR, RT-PCR, Nested PCR and their applications
- Statistical data analysis in terms of clinical approach

Lab overview:

The internship commenced with an orientation to the well-equipped laboratory, where cutting edge instrument like Spectrophotometers, gel electrophoresis apparatus, PCR machines, gel documentation system and sequencers were utilized for diverse experiments.

Outcome Report:

A significant portion of the internship focused on DNA extraction from blood and other biological samples. The internship began with an introduction to the laboratory setup and essential safety protocols. This fundamental knowledge ensured a secure working environment and a clear understanding of the importance of precision in molecular experiments.

The students improved their skills in isolation of high-quality DNA, employing both manual and automated spin column extraction methods. Extraction of DNA from bacterial cultures and cerebrospinal fluids was also demonstrated by boiling method.

The application of PCR in amplifying specific DNA sequences was a key aspect and the students became proficient in designing PCR primers, setting up reactions and optimizing conditions for efficient DNA amplification.

The internship involved hands on training in gel electrophoresis techniques for visualizing and analysing DNA fragments followed by interpretation of gel results and discussions on troubleshooting.

The students gained insight in to advance technology through DNA sequencing experiments and participated in the analysis of sequencing data.

Understanding the principles of quantitative PCR and its applications in gene expression analysis for quantifying gene expressions levels was integral part of internship.

The internship emphasized the significance of proficient data analysis. Utilizing software tools for analysis of PCR and sequencing results enhance the ability to draw meaningful conclusions.

The students actively contributed to ongoing research projects, collaborating with experienced scientists and fellow interns.

This exposure provided with holistic view of how molecular techniques contribute to broader scientific events. The internship deepened the understanding of molecular techniques and instilled a sense of appreciation for the pivotal role in advanced biological research.

Exploring the realm of next generation sequencing (NGS) was a key aspect of internship. The students were familiarized with sequencing platforms, library preparation and bioinformatics pipeline used for handling large scale genomic data.

The internship also underscored the importance of quality control in molecular techniques for reliability of experimental results. The students were also expanded their communication skills by preparing reports, presenting findings to the research team and participating in group discussions. Beyond this, the internship provided opportunities for professional development of the students.

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Hands on Training

On

"Food Microbiology and Enzyme Technology"

In Collaboration with

BioInnovale Lifescience Private Limited, Bengaluru

(08th January to 14th January 2024)

Objectives:

The objectives of the workshop were to provide information about how the microorganisms are handled for safety of food, the presence of specific microbial strains, potential contaminants and effectiveness food preservation methods. Source of enzyme to be used for industrial purposes, extraction, purification, quantification and applications.

S.No.	Resource Persons
1	Dr. Devashish Sahoo, Director, Bioinnvale Lifescience Pvt. Ltd., Bhubaneswar
2	Mr. Virendra Vaishnav, Technical Assistant, Bioinnvale Lifescience Pvt. Ltd., Bhubaneswar
3	Mr. Rajesh Khatik, Technical Assistant, Bioinnvale Lifescience Pvt. Ltd., Bhubaneswar
S.No.	**Faculty Involvement** **Dept. of Microbiology, Govt. VYT PG Autonomous College, Durg (CG)**
1	Dr. Pragya Kulkarni
2	Mrs. Rekha Gupta
3	Mrs. Neetu Das
4	Ms. Mrinalini Soni
5	Ms K.K. Yashoda
Participants	**52 (PG students and Research Scholars)**

S.No.	Name	Class	S. No.	Name	Class
1	Abhinav	M.Sc. Sem II	26	Anisha	M.Sc. Sem IV
2	Aman	M.Sc. Sem II	27	Archana Chandrakar	M.Sc. Sem IV
3	Ankita	M.Sc. Sem II	28	Bhumika Karte	M.Sc. Sem IV
4	Baby Rai	M.Sc. Sem II	29	Danish Vinod Patil	M.Sc. Sem IV

5	Bharti	M.Sc. Sem II	30	Divya Rahangdale	M.Sc. Sem IV
6	Bhavnavi	M.Sc. Sem II	31	Esha Nag	M.Sc. Sem IV
7	Chanchal	M.Sc. Sem II	32	Falita Kunjam	M.Sc. Sem IV
8	Deepshikha	M.Sc. Sem II	33	Heena	M.Sc. Sem IV
9	Devika	M.Sc. Sem II	34	Jyoti	M.Sc. Sem IV
10	Hina	M.Sc. Sem II	35	K. Divya Rao	M.Sc. Sem IV
11	Kanika	M.Sc. Sem II	36	Kajal Dhritlahare	M.Sc. Sem IV
12	Lumisha	M.Sc. Sem II	37	Kedarnath	M.Sc. Sem IV
13	Malaj	M.Sc. Sem II	38	Kunjita Deshmukh	M.Sc. Sem IV
14	Monika	M.Sc. Sem II	39	Madhvi Sahu	M.Sc. Sem IV
15	Naina	M.Sc. Sem II	40	Mansi Shrivastava	M.Sc. Sem IV
16	Parasmani	M.Sc. Sem II	41	Monisha	M.Sc. Sem IV
17	Pooja	M.Sc. Sem II	42	Pragya Bhatt	M.Sc. Sem IV
18	Sangeeta	M.Sc. Sem II	43	Pragya Sakhare	M.Sc. Sem IV
19	Sanjeevani	M.Sc. Sem II	44	Sanket Kumar	M.Sc. Sem IV
20	Shraddha	M.Sc. Sem II	45	Saroj	M.Sc. Sem IV
21	Shristi	M.Sc. Sem II	46	Sunita	M.Sc. Sem IV
22	Suman	M.Sc. Sem II	47	Tirishya Gota	M.Sc. Sem IV
23	T. Prakash	M.Sc. Sem II	48	Uzma Khatoon	M.Sc. Sem IV
24	Tanuja	M.Sc. Sem II	49	Vandana Sidar	M.Sc. Sem IV
25	Umashankar	M.Sc. Sem II	50	Vani Thakur	M.Sc. Sem IV
51	Taniya Sahu	Research Scholar	52	Ms. Anamika Sharma	Research Scholar

Brief Report:

In-House Hands-on Training was organized for PG students of Microbiology during 8th to 14th January 2024. The objectives of the workshop were to provide expanded understanding of enzymology and offering valuable insights for future applications and research in the field. The hands-on experience on food microbiology enhances understanding of microbial interactions in food contributing to a more comprehensive knowledge of food safety and quality assurance. The workshop was sponsored by PM-USHA for skill enhancement of students.

Day 1 **08.01.2024**	• **Registration** • **Inauguration:** Chief Guest: Dr. M.A. Siddiqui, Principal, Govt. V.Y.T. PG Autonomous College, Durg • **Lecture:** General introduction about food Microbiology. Food as substrate for microorganisms (Dr. Devashish Sahoo) • **Practical:** Good manufacturing practices, Quality guidelines of industries, Code of federal regulations, Clinical research, Critical limits and personal hygiene • **Lecture:** Properties and possible sources of Bromelain. • **Practical:** Extraction and primary purification of enzyme by crushing,

	separation and filtration method from pineapple
Day 2 **09.01.2024**	• **Practical:** Enzyme purification by centrifugation and estimation of total protein, Salt precipitation of enzyme, selection of salt and its importance
Day 3 **10.01.2024**	• **Lecture:** What is dialysis, when and how it is done, about dialysis membrane • **Practical:** Activation of Dialysis membrane, loading, preparation of magnetic steerer and standardization time for dialysis
Day 4 **11.01.2024**	• **Lecture:** Chromatography, types, column beds, elution and elutes • **Practical:** Column packing, and collection of elute, Validation of Pharmaceutical products for microbial contamination, examination of tablets and dairy products, inoculation on different culture media
Day 5 **12.01.2024**	• **Practical:** Total protein estimation by Folin Lowry method and Enzyme assay, preparation of graph, Calibration curve
Day 6 **13.01.2024**	• **Practical:** Observation of culture plates for microbial growth, MBRT for milk samples, SDS PAGE for protein profiling for crude and purified enzyme, Application of pure enzyme for meat tenderization
Day 7 **14.01.2024**	➢ **Quiz for Participants:** Through Kahoot software (25 Questions based on entire learning of workshop) ➢ **Feedback session for Participants** ➢ **Certificate distribution**


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DEPARTMENT OF MICROBIOLOGY

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG

NATIONAL CONFERENCE
ON
MICROBIAL BIOPROSPECTING: EXPLORATION AND CONSERVATION
(5th and 6th February 2024)

The conference provided an excellent forum for Participants and students to understand and focus on emerging features of MICROBIAL BIOPROSPECTING and it was a modest attempt to generate response from all corners towards awareness of applied aspects of Microbiology.

Objectives:

Exploration And Conservation of Microbial Biodiversity For:

*Agriculture, Food and Nutrition (AFN)

*Secondary Metabolite and Biofuel Production (SBP)

*Bioremediation and Waste management (BRW)

*Nanotechnology, Medicine and Cosmetology (NMC)

*Microbial Biotechnology and GMO (MBG)

*Bioinformatics and computational biology (BIC)

Chief Guest for Inauguration:

Dr. K. Subramaniam, Member, State Planning Commission, Chattisgarh

Key Note Address:

1. **Dr. A.M. Deshmukh, Rtd. Principal and national President, MBSI**
   Topic: Microbial Bioprospecting: Exploration of useful Microorganisms
   Application of microorganisms in bioleaching, Biopesticide, Bioplastic, Bio cementing and as Bioweapons

Plenary Lectures:

1. **Dr. Sanjeev Patankar: Rtd. Principal and National Coordinator, MBSI**
   Topic: Probiotics: Possible role in combating malnutrition
   Study of tribal food Ambil as probiotic and discussions on prebiotic and symbiotic food material and their importance in human health
2. **Dr. K. Surya: Scientist, CIPHET, Ludhiana**
   Topic: Unlocking Value: Protein extraction from Agro-Industrial Residues

Types of Agro-industrial residues, biproducts, Co-products and waste for extraction of protein to address protein requirements of expanding population.

3. **Dr. K.K. Sahu: Professor, SoS in Biotechnology, Pt. RSU, Raipur**
   Topic: Microorganisms: Bio producer, Eco-cleaner, Productivity enhancer and Nutrient Provider
   Application of bacterial consortium for TNT detection, remediation of industrial wastes, heavy mental contamination, plant growth promoter and in boosting the plant growth.

Chair persons:

1. Dr. Rupinder Diwan: Professor, Govt. N. PG Autonomous College, Raipur
2. Dr. Vimal Kanungo: Assistant Professor, Govt. J. Yoganandam PG College, Raipur
3. Dr. Ranjana Shrivastava, Professor, Govt. V.Y.T. PG Autonomous College, Durg
4. Dr. Usha Sahu, Assistant Professor, Govt. V.Y.T. PG Autonomous College, Durg

Chief Guest for Valedictory:

Shri Shirish Taunk, Managing Director, SRT Agrobiotech Pvt. Ltd., Funda Patan, Durg

Participants:

Faculties	**41**
Research Scholars	**12**
UG/ PG Students	**91**

States Covered: 07 (Chhattisgarh, Madhya Pradesh, Maharashtra, Gujrat, Rajasthan, West Bengal, Punjab)

The conference started on 05.02.2024 with Saraswati Vandana and formal welcome of guests.

Welcome Address and about the theme of conference was delivered by the convener Dr. Pragya Kulkarni followed by blessings of In charge Principal Dr. S. N. Jha. Inaugural Speech was delivered by chief guest Dr. K. Subramaniam. He spoke on ancient knowledge about bioprospecting and modern practices and concluded with applications of microbial bioprospecting. Dr. A. M. Deshmukh, National President, MBSI through light on MBSI initiatives and activities throughout the nation and appealed the audience to join the society for betterment of mankind. Vote of thanks was given by Mrs. Bharti Ahirwar. The session was conducted by Mrs. Rekha Gupta.

The key note address was given by Dr. A.M. Deshmukh. He demarcated the theme of Microbial bioprospecting using various examples.

The first plenary lecture was delivered by Dr. Sanjeev Patankar, Rtd. Principal and National coordinator, MBSI. He emphasised the used of probiotics in food and discussed the case study of a tribal food of Gadhchiroli, Maharashtra.

The second plenary lecture was supported by Dr. K. Surya, Scientist, CIPHET, Ludhiana, on Unlocking Value: Protein extraction from Agro-Industrial Residues. She explained the definition of Agro-residues and discussed the various uses of it.

The session after lunch was dedicated to Oral and Poster presentations of the participants. It was conducted in two parallel sessions and chaired by Dr. Rupinder Diwan, Dr. V.K. Kanungo, Dr. Ranjana Shrivastava and Dr. Usha Sahu respectively.

The presentations were further divided in to three categories as Students, Research Scholars and Faculties.

Oral Presentation	
Category	**Number of participants**
Faculty	5
Student	8
Research Scholar	5
Poster Presentation	
Student	9
Research Scholar	3
Faculty	4

Results of Presentation:

Oral Presentation	
Student	**Result**
Danish Vinod Patil, M.Sc. Sem IV, Govt. VYT PG Autonomous College, Durg (C.G.)	I
Ms. Mansi Shrivastava, M.Sc. Sem IV, Govt. VYT PG Autonomous College, Durg (C.G.)	II
Ms. Shruti Kumari, B.Sc. III, O.P. Jindal University, Punjipathara, Raigarh (C.G.)	III
Research Scholar	
Ms. Anamika Sharma, Govt. VYT PG Autonomous College, Durg	I
Dev Narayan Patel, Govt. N.PG College of Science, Raipur (C.G.)	II
Ms. Hemshikha Sahu, Govt. N.PG College of Science, Raipur (C.G.)	III
Faculty	
Mr. Yogesh Kumar, NRC on Camel, Rajasthan	I
Dr. Anindita Deb Pal, J.D. Birla Institute, Kolkata (W.B.)	II
Ms. Mausami Dey, Govt. VYT PG Autonomous College, Durg (C.G.)	III
Poster Presentation	
Student	**Result**
Ms. Megha and Disha Babulkar, Nabira Mahavidyalaya, Katol (M.S.)	I
K Divya Rao and Anisha, Govt. VYT PG Autonomous College, Durg (C.G.)	II
Ms. Kashish Nag, Ms. Akansha, Ms. Shaily Prajapati and Ms. Khushi Singh, O.P. Jindal University, Punjipathara, Raigarh (C.G.)	III
Research Scholar	
Mrs. Mansi Sahu, Govt. VYT PG Autonomous College, Durg (C.G.)	I
Ms. Neha Toppo, St. Thomas College, Bhilai (C.G.)	II

Ms. Laleeta, Govt. VYT PG Autonomous College, Durg (C.G.)	III
Faculty	
Ms. Dhanashree M. Ridhorkar, Nabira Mahavidyalaya, Katol (M.S.)	I
Mrs. Neetu Das, Govt. VYT PG Autonomous College, Durg (C.G.)	II

Third plenary session was started on 06th Feb with the lecture of Dr. K.K. Sahu on Microorganisms: Bio producer, Eco-cleaner, Productivity enhancer and Nutrient Provider. He explained the various applications of indigenous microorganisms in production of useful products, fertilizers, bio reclamation agent and bio nutrient producer etc.

Valedictory Session:

The valedictory session was presided by Dr. M.A. Siddiqui, Principal and Patron with the chief guest Mr. Shirish Taunk, Managing Director, SRT Agro biotech Pvt. Ltd., Funda Patan, Durg. The session was initiated with concluding remarks by the convener Dr. Pragya Kulkarni. She concluded that the theme and the objectives of the conference was successfully deliberated and the possibilities of application of microorganisms as bioprospecting tool has been introduced among the assembly.

Mr. Shirish Taunk addressed the gathering about huge opportunities in the microbial bioprospecting. He summarized his own experience in developing his firm starting from production of Rhizobium and Mycorhhiza based biofertilizer at small scale to present day nanotechnology based biofertilizers, biopesticides and micronutrients for national and internation supply.

The rank holders were cherished with a token of prizes and all participants were appreciated with participation certificates at the end.

Finally, the Principal conveyed his best wishes and blessings for successful completion of the conference.

The session was conducted by Mrs. Neetu Das and Vote of thanks was given by Mrs. Rekha Gupta.

Convener Dr. Pragya Kulkarni Head, Microbiology Department Govt.V.Y.T.PG Autonomous College, Durg	**Organizing Secretary** Mrs. Rekha Gupta Mrs. Neetu Das
Organizing Committee Miss. Mrinalini Soni Miss. Kunu Kanda Yashodha Miss. Anamika Sharma Mrs. Hempushpa Urwasha Mrs. Mansi Sahu Mrs. Bharti Ahirwar Miss. Tanya Sahu	**Advisory Committee** Dr. A. M. Deshmukh, President MBSI Dr. Swaranjit Singh, Ex. Head Env. Biotech. Microbiology CSIR-IMTECH, Chandigarh Dr. Sanjeev Patankar, National Coordinator MBSI Dr. Nachiket Kotwaliwale, Director CIPHET, Ludhiana Dr. Samlesh Kumari, CIAE, Bhopal Dr. A. K. Gupta, Rtd. Prof. SOS Life Science, Pt. RSU, Raipur

	Dr. K. K. Sahu, Head SOS Biotechnology, Pt. RSU, Raipur Dr. Anil Kotasthane, IGKV, Raipur Dr. Ranjana Shrivastava, Govt. V.Y.T. PG Auto. College, Durg Dr. Anil Kumar, Govt. V.Y.T. PG Auto. College, Durg Dr. Usha Sahu, Govt. V.Y.T. PG Auto. College, Durg Dr. Sanju Sinha, Govt. V.Y.T. PG Auto. College, Durg


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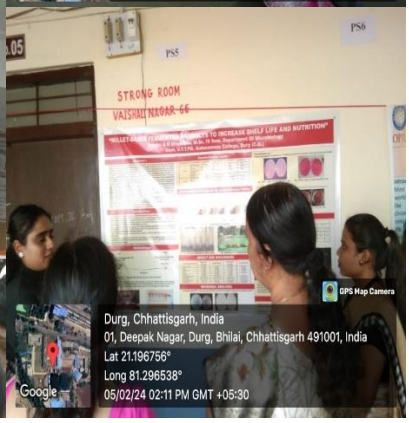
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