

**A report on**  
**Hands on Training *cum* Workshop on Molecular Techniques**  
**School of Studies in Biotechnology,**  
**Pt. Ravishankar Shukla University, Raipur, 492010**  
**18-19 November 2022**

In continuation of celebration of “*Azadi Ka Amrit Mahotsav*”, Alumni Association of Biotechnology, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur (Chhattisgarh) and M/s HiMedia Laboratories Pvt. Ltd., Mumbai, organized a two days “Hands-on-Training cum Workshop on Molecular Techniques” jointly on 18-19 November 2022.

The event officially began at 11:00 am on 18 November 2022. Ms. Nisha Gupta (Ph. D. scholar) was commenced the program by welcoming our distinguished guests. Dr. Keshav Kant Sahu, Professor and Head of Department, School of Studies in Biotechnology, Pt. Ravishankar Shukla University welcomed Dr. Chaitra G. Bhatt, Molecular Biology product specialist, HiMedia Laboratories Pvt. Ltd., Mumbai, with a bouquet of flowers along with Mr. Abhishek Wanjari, Regional Business Manager, HiMedia Laboratories Pvt. Ltd., Mumbai, followed by a brief description about the two days program by Dr. Nagendra Kumar Chandrawanshi, Secretary, Alumni Association of Biotechnology, School of Studies in Biotechnology, Pt. Ravishankar Shukla University and inaugural ceremony ended with Dr. Keshav Kant Sahu’s motivational, inspiring and enthusiastic words to all the students and scholars.



### **Briefing of the session by Dr. Nagendra Kumar Chandrawanshi**

After this, Dr. Chaitra G. Bhatt took the lead of the session and briefed about the two practical's that were to be performed. The two practical's were "Phage titration by plaque assay method" and "IgG purification". All the students of M.Sc. I<sup>st</sup> semester and 3<sup>rd</sup> semester along with all the research scholar actively participated in the training sessions.



### **Dr. Chaitra G Bhatt briefing about the experiments**

## ***A brief introduction about the two experiments:-***

### **PHAGE TITRATION**

Phage titration is based on the lytic life cycle of bacteriophages where the lambda phages infect the host cell by binding to a specific maltose binding receptor present on the surface of *E.coli* and lyse them by releasing their progeny that diffuses to the neighboring cells and infects those forming plaques.

### **IgG PURIFICATION**

IgG purification is based on ‘affinity chromatography’ technique where molecules are separated and purified on the basis of their binding specificity to certain molecules. The IgG binds to specific ligands called protein A which is remounted on a gel matrix. The mixture of antibodies or proteins is allowed to bind to the ligands and the unbounded ones are removed and the quantitative estimation of the separated and purified protein is done by SDS-PAGE.

### **LABWORK DONE ON 18 NOVEMBER 2022**

On 18<sup>th</sup> of November, 1<sup>st</sup> practical that is phage titration was performed in 1<sup>st</sup> half. The *E.coli* bacterial broth cultures and the phage lysate culture were prepared before hand on 16 and 17 November by the students of M.Sc. I and III semesters. On 18 November, serial dilution of the phage lysate was prepared, the 300µl of *E.coli* cultures were mixed with 100 µl of respective phase dilution then this mixture was mixed with 4 ml of soft agar, this suspension was poured over LB agar plates, and the plates were incubated at 37°C overnight. Dr. Chaitra G. Bhatt first demonstrated the experiment and then students performed the experiment under her guidance.



## Demonstration of the experiment



## Students performing the experiment

In the 2<sup>nd</sup> half, IgG purification was performed, experiment started by activating the spin column and elution of preservative, then the mixture of proteins was passed through the protein column and was allowed for binding with respect to



specificity and the unbounded proteins were removed by washing and all the eluted samples were also labelled and preserved.

## **LABWORK DONE ON 19 NOVEMBER 2022**

On 19<sup>th</sup> of November, for the phage titration experiment, the incubated plates were analyzed for the plaque formation. The no. of plaques for each dilution was counted and phage titer value was calculated.



### **Counting of plaques on the culture plates**

For the IgG purification experiment, all the elutes and sample was run using SDS-PAGE for confirmation of purified protein along with the protein ladder as reference. The students loaded the samples in the wells and after a runtime of 2 hours, bands were observed and analyzed.



**Demonstration of loading samples into the wells**



**Students loading the samples for SDS-PAGE**



### **Visible bands on the gel after SDS PAGE**

After the successful completion of both the experiments, an online MCQ assessment test was conducted for all the participants of the training session along with refreshments. This two days a hand on training program cum workshop was a good exposure to the students about lab work and handling skills. All the students along with research scholars participated enthusiastically and sincerely in the session and learned various aspects of lab work under the guidance of Dr. Chaitra G. Bhatt. Along with lab work, students were enlightened with various minute details, trouble shooting of the experiments and precautionary measures to avoid them and along with the hope of having this kind of events more frequently in the future the training program was successfully concluded.



*Some glimpses of interaction between students and mentor*





## THE VALEDICTORY CEREMONY

Dr. Nagendra Kumar Chandrawanshi and Dr. Afaque Quraishi commenced the valedictory ceremony with presenting a memento to Dr. Chaitra G. Bhatt followed by a feedback about the 2 days training program. Ms. Bipasha Singh from M.Sc. I semester and Ms. Diksha Dubey from M.Sc. III semester along with Ms. Shristi Verma (Ph.D. Scholar) and Ms. Varsha Meshram (Ph.D. Scholar) presented their views and provided a feedback on the 2 days training program. After that, Dr. Chaitra G. Bhatt also presented her views on this 2 days training program and about her experience in the department with the students. Vote of thanks was delivered by Dr. Shubhra Tiwari, Joint Secretary, Alumni Association of Biotechnology, Pt. Ravishankar Shukla University to the HiMedia Laboratories, to the guests, Alumni Association of Biotechnology and to all the students and scholars for their active participation, and after taking group photos the session was terminated.



**Presenting of memento to Dr. Chaitra G Bhatt**

