



Report
on
Five days Hands-on-Training *cum* Workshop

On

Methods of Gene Cloning and Protein Purification
19 November – 23 November 2024

Jointly Organized by

School of Studies in Biotechnology, Pt. Ravishankar Shukla University
&
Alumni Association of Biotechnology
&
Central Instrumentation Facility, Pt. Ravishankar Shukla University
&
Gujrat Biotechnology University, Gandhinagar
&
HiMedia Laboratories Pvt. Ltd. Mumbai

DAY 1: 19 November 2024

Five days Hands-on Training cum Workshop on “**Methods of Gene Cloning and Protein Purification**” was jointly organized by the **School of Studies in Biotechnology**, PRSU, Raipur, **Alumni Association of Biotechnology** and the **Central Instrumentation Facility**, PRSU, in collaboration with **Gujarat Biotechnology University**, Gandhinagar, and **HiMedia Laboratories Pvt. Ltd.**, Mumbai, from **19- 23 November 2024**.

In this workshop, **90 students** participated from various institutions, including Government College Kurud, Government College Mahasamund, Government, D.B. Girls PG College, Raipur, Nagarjuna Science PG College Raipur, Center for Basic Sciences, PRSU, School of Studies in Life Science, PRSU and students of M.Sc. I and III semesters of the School of Studies in Biotechnology.

The workshop commenced with the ceremonial lighting of the lamp by **Prof. Sachchidanand Shukla**, Hon’ble Vice Chancellor of PRSU, Raipur, accompanied by **Prof. Keshav Kant Sahu**, Head, School of Studies in Biotechnology, PRSU and other esteemed faculty members of the school. **Prof. Keshav Kant Sahu** warmly welcomed the gathering and encouraged the students to participate in the workshop actively.

This was followed by an address by **Prof. Sachchidanand Shukla**, Hon’ble Vice Chancellor of PRSU, who emphasized the importance of practical knowledge over theoretical learning. **Prof. Sudhir Singh**, Dean Research and **Dr. Rohini Nair**, Assistant Professor from Gujarat Biotechnology University were joined inaugural session virtually. They talked about the facilities and programs of Gujarat Biotechnology University.

On the first day of the training session, Dr. Mangesh Manker, Product Expert (Molecular Biology), provided an insightful overview of various molecular biology techniques and the workflow of molecular biology processes. The first day concluded with a vote of thanks delivered by **Dr. Nagendra Kumar Chandrawanshi**.

DAY 2: 20 November 2024

The second day of the workshop began with an explanation of the day's experimental workflow, titled **Southern Blotting**, and its underlying principle, delivered by experts **Dr. Mangesh Mankar** and **Mr. Abhishek Wanjari**. The activities from the previous day were also completed. The **Southern Blotting experiment** started with the preparation of reagents and gel, followed by gel casting, DNA sample loading, and gel electrophoresis. After that, the students visited the Central Instrumentation Facility, PRSU, to explore the functioning of **Atomic Absorbance Spectrometry (AAS)**.

At 4:00 pm, a virtual interactive session was organised for the participants. The session featured **Ms. Vandana Bhansali**, Chief People Officer at Yashraj Biotechnology Limited, Navi Mumbai. It was a good interactive session in which students asked various questions regarding scholarship programs, placement opportunities etc. The day concluded with a **Valedictory Function**, during which students shared their experiences of the hands-on training workshop. Finally, mementos were presented to **Dr. Mangesh Mankar** and **Mr. Abhishek Wanjari** by **Dr. Kamlesh Kumar Shukla** and **Dr. Afaque Quraishi** as a token of appreciation for their valuable contributions to the workshop.

DAY 3: 21 November 2024

The second segment of this session commenced on **21 November, 2024**, focusing on the intricate processes of gene cloning and protein purification. The session began with a welcome address by **Prof. Keshav Kant Sahu**, Head, School of Studies in Biotechnology, PRSU to the distinguished alumni and the expert for the session, **Dr. Rohini Nair** from the Department of Medical Biotechnology, Gujarat Biotech University, Gujarat.

The practical activities began with the transformation of *E. coli* and concurrently conducting protein purification. The initial steps involved combining primers, plasmids, and all necessary PCR reagents, followed by running the PCR process for a duration of four hours.

During PCR reaction there was an invited talk of **Dr. Neha Pandey**, Research Mentor, Credge EdTech Pvt. Ltd., Bangaluru on the topic **Give wings to your ambition: The Credge way**. Post-lunch, participants initiated the protein purification process using LB media, which included an overnight incubation period. Dr. Rohini then conducted a session on primer design, demonstrating the use of various bioinformatics tools and discussing optimal conditions for designing primers. Before concluding the day's activities, she provided a concise overview of the protocols planned for execution on the following day.

DAY 4: 22 November 2024

On the fourth day of the workshop, the second session, **Dr. Rohini**, focused on hands-on techniques for screening and analysing genetically transformed *E. coli*. Participants then prepared a Nickel NTA column, a crucial step in affinity chromatography for purifying His-tagged recombinant proteins.

Dr. Rohini explained the underlying principles of selective binding between the histidine residues on the target protein and the nickel ions immobilised on the resin. The eluted protein fractions were subsequently analysed using SDS-PAGE (sodium dodecyl sulfate-polyacrylamide gel electrophoresis).

The session gave participants practical insights into recombinant protein production, encompassing key steps from genetic transformation to protein analysis. Key takeaways included understanding the workflow, the importance of screening transformed cells, developing skills in column preparation and protein purification, and learning the principles and interpretation of SDS-PAGE results.

On this day, a popular lecture was delivered by Dr. Jagat Kumar Roy, Former Head and Professor of the Department of Zoology, Cytogenetics Unit, BHU, Banaras, on the topic Gene, Genetics Disorders and Cancer. It was a very informative lecture for the postgraduate students of the school.

DAY 5: 23 November 2024

The workshop's final day continued with the earlier experiments, beginning with an explanation and interpretation of the complete experimental results by **Dr. Rohini**.

An online exam assessed the participant's understanding of the concepts and techniques covered during the hands-on training. All students actively participated in this activity.

Meanwhile, Dr. Sujoy Kumar Das Gupta, Emeritus Scientist, Microbiology, Bose Institute, Kolkata, on “The Evolution of DNA technologies” organised an invited talk for the participants.

The workshop concluded with a **valedictory function**, during which students shared their experiences from the hands-on training sessions. Certificates of participation were distributed to the attendees.

As a token of appreciation, **Prof. Keshav Kant Sahu** presented a memento and a certificate to **Dr Rohini Nair for her contributions to the training program and Dr Sujoy Kumar Das Gupta in acknowledgement** of his insightful lecture.

Dr. Afaque Quraishi delivered the vote of thanks, expressing gratitude to the participants for their enthusiastic involvement throughout the session. He congratulated them on completing the hands-on training and expressed hope that the knowledge would contribute to their academic and professional pursuits.

Glimpses of the Workshop

DAY- 1; 19/11/2024



DAY- 2; 20/11/2024



Raipur, Chhattisgarh, India
6hvr+qhf, Amanaka, Raipur, Chhattisgarh 492010, India
Lat 21.244546° Long 81.591586°
20/11/24 09:58 AM GMT +05:30

DAY- 3; 21/11/2024



Raipur, Chhattisgarh, India
6hvr+qhf, Amanaka, Raipur, Chhattisgarh 492010, India
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21/11/24 10:58 AM GMT +05:30

Raipur, Chhattisgarh, India
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21/11/24 10:41 AM GMT +05:30



Raipur, Chhattisgarh, India
6hvr+qhf, Amanaka, Raipur, Chhattisgarh 492010,
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21/11/24 11:38 AM GMT +05:30

Raipur, Chhattisgarh, India
6hvr+qhf, Amanaka, Raipur, Chhattisgarh 492010
Lat 21.244542° Long 81.591592°
21/11/24 03:43 PM GMT +05:30

DAY- 4 22/11/2024



DAY- 5; 23/11/2024





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Invitation



Five Days Hands-on-Training cum Workshop

On

Methods of Gene Cloning and Protein Purification

Organisers

School of Studies in Biotechnology

Alumni Association of Biotechnology

Central Instrumentation Facility

Pt. Ravishankar Shukla University, Raipur 492 010, Chhattisgarh

Gujrat Biotechnology University, Gandhinagar

HiMedia Laboratories Pvt. Ltd., Mumbai

19 - 23 November 2024, 10:30 AM Onwards

Chief Guest

Prof. Sachchidanand Shukla

(Hon'ble Vice-Chancellor)

Pt. Ravishankar Shukla University, Raipur

Experts :

Dr. Rohini Nair

Faculty/ Technical Expert
Medical Biotechnology, GBU
Gandhinagar

Dr. Mangesh Manker

Product Expert
Molecular Biology, HiMedia Pvt. Ltd.
Mumbai

Convenors

Prof. Keshav Kant Sahu
(Head, SoS in Biotechnology, PRSU)
Prof. Sudhir Singh
(Dean Research, GBU)

Coordinators

Dr. Nagendra Kumar Chandrawanshi
Dr. Rohini Nair

School of Studies in Biotechnology & Alumni Association of Biotechnology
Pt. Ravishankar Shukla University, Raipur

Jointly organising
Interactive meeting




Ms. Vandana Bhansali
Chief People Officer
Yashraj Biotechnology Limited - Corporate Office
Navi Mumbai

 **4:00 PM, 20 November 2024**

You are Cordially Invited to attend

School of Studies in Biotechnology & Alumni Association of Biotechnology
Pt. Ravishankar Shukla University, Raipur

Jointly organized
Invited Talk
By



Dr. Neha Pandey
Research Mentor
Credge EdTech Pvt. Ltd., Bangaluru

On
**Give Wings to Your Ambition:
The Credge Way**

21
NOVEMBER
2024

3:30 PM to 4:30 PM
 Seminar Hall, SoS in Biotechnology, PRSU

School of Studies in Biotechnology & Alumni Association of Biotechnology
Pt. Ravishankar Shukla University, Raipur 492 010 (C.G)

Organising
Invited talk
By



Dr. Jagat Kumar Roy
Former Head & Professor
Department of Zoology
Cytogenetics Unit, BHU, Banaras


On
Gene, Genetics Disorders and Cancer

 **22 Nov 2024,**  **11:15 AM**

 Seminar Hall, SoS in Biotechnology, PRSU



School of Studies in Biotechnology & Alumni Association of Biotechnology
Pt. Ravishankar Shukla University, Raipur

Jointly organizing
A Popular lecture
by



Dr. Sujoy Kumar Das Gupta
Emeritus Scientist
Microbiology, Bose Institute, Kolkata

On
The evolution of DNA technologies

 **23rd**
November 2024 |  **1:00 PM**

Venue: SoS in Biotechnology (PRSU)
You are cordially invited to attend

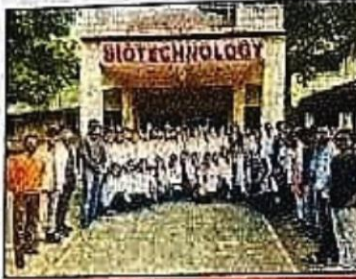
PRSU holds nat'l workshop on biotech advancements

TIMES NEWS NETWORK

Raipur: State-run Pt Ravishankar Shukla University (PRSU) conducted a five-day National hands-on-training cum workshop from Nov 19 to 23 on biotech advancements. PRSU Vice Chancellor Professor Sachchidanand Shukla, along with other guests, inaugurated the workshop, which included several practical sessions on southern blotting, antibody and protein purification, and gene cloning characterisation.

These sessions helped participants understand applications in medicine, research, and forensics.

The programme was successfully coordinated by con-



MED TRAINING

venors Prof. Keshavkant Sahu from Pt. Ravishankar Shukla University and Prof. Sudhir Singh from Gujarat Biotechnology University, Gandhinagar. Subject experts Dr. Rohini Nair from Gujarat Biotechnology University and Dr. Mangesh Mankar from Hi-Media Laboratories, Mumbai, conducted practical sessions on so-

uthern blotting, antibody and protein purification, and gene cloning.

Participants visited the Central Instrumentation Facility (CIF) at Pt. Ravishankar Shukla University, where they observed an Atomic Absorption Spectroscopy (AAS) demonstration.

The workshop featured lectures by distinguished scholars, including Dr. Jagat Kumar Roy from Banaras Hindu University, Dr. Sujoy Kumar Das Gupta from Bose Institute, Kolkata, Ms. Vandana Bhansali from Yashraj Biotechnology, Mumbai, and Dr. Neha Pandey from Craze Education, Bangalore. The programme concluded with certificate distribution.