Workshop Report

Add-on Course
Hands-On Training and Workshop
ON
SKILL DEVELOPMENT PROGRAMME

Jointly organized by
Department of Biosciences, JIS University and
Gurudas College
in collaboration with Andragogy Life Sciences

1ST AUGUST TO 4TH AUGUST 2023

Protein Purification and Analysis

- Purification of an enzyme from a crude by Affinity Chromatography
- Separation of Protein Mixture by Gel Filtration Chromatography
- Separation of Amino Acids/lipids by Thin Layer Chromatography
- Purification of Protein by organic solvent
- Detection of purified protein by SDS-PAGE
- Visualization of SDS-PAGE

:Venue:

Department of Biosciences, JIS UNIVERSITY
81, Nilgunj Road, Jagarata Pally, Deshapriya Nagar,
Agarpara, Kolkata West Bengal-700109

Summary of Add-on Course

on Skill Development Programme

Jointly Organized by

Department of Biosciences, JIS University and Gurudas College

in Collaboration with

Andragogy Life Sciences, Kolkata

[1st -4th August,2023]

***Title*:** Skill Development Programme on **Protein Purification and Analysis- Hands on Training**

***Category*:** Hands on training for UG students

***Date*:** 1st-4th August, 2023 (4 days)

No. of Registered Participants: 62

No. of Participants: **Thirty-four** students from JIS University; **seven** students from Gurudas College, University of Calcutta; **Nine** Students from Banwarilal Bhalotia College, Kazi Nazrul University; **Two** from Barrackpore Rastraguru Surendranath College, West Bengal State University; **Four** students from University of Burdwan, **Two** students from Diamon Harbour Women's University, **Two** students from Techno India University, **One** Student from Brainware University and **One** student from Rishi Bankim Chandra College

***Organizer*:** Jointly Organized by Department of Biosciences, JIS University and Gurudas College in Collaboration with Andragogy Life Sciences, Kolkata

***Venue*:** JIS University

Duration: 30 hours

Mode: Offline

Programme Schedule

Day 1:

- Separation of Amino Acids by Thin Layer Chromatography
- Purification of Protein by organic solvent

Day 2:

- Separation of Protein mixture by Gel Filtration Chromatography
- Purification of an enzyme from a crude mixture by Affinity Chromatography

Day 3:

- Detection of purified enzyme by affinity chromatography on SDS-PAGE
- Detection of separated protein mixture by gel filtration chromatography on SDS-PAGE
- Detection of purified protein by organic solvent on SDS-PAGE

Day 4:

- Visualization of SDS-PAGE
- Evaluation of the students in online mode
- Closing session, Feedbacks from participants followed by Participation and Merit certificates distribution

About Andragogy Life Sciences:

Andragogy Life Sciences is a Kolkata-based low-cost Molecular Biology Kit developing company with modern infrastructure. Previously, it was known as Andragogy which started its journey from 2015 as a career guidance institute to prepare students for postgraduate entrance examinations conducted by different institutes and universities in India. At the beginning of 2021, ALS started to develop some teaching kits for students and conduct some hands-on training programmes in different fields of life sciences at their institute. The company develops a wide range of products related to modern and applied biology. Their mission is to provide cost effective high yielding products required for research. The company offers molecular biology kits, buffers, reagents, fine chemicals and PCR related products. ALS organises workshops, certificate courses, hands-on training to the students in collaboration with different institutes in India. The company has a well-equipped laboratory with modern facilities and also has collaboration with some renowned scientists.

REPORT:

DAY 1- Inauguration session [1st August, 2023]

The inaugural session of the Add-on Course on Skill Development Programme took place on August 1st, 2023 at Department of Biosciences, JIS University. The event commenced with a warm welcome extended to Andragogy Life Sciences team, Prof. Samrat Chatterjee, Faculty from Gurudas College, and the participating individuals attending the hands-on training. Dr. Abhik Acharya Chowdhury, Head of the Department of Biosciences at JIS University, officiated the proceedings. Dr. Chowdhury generously provided laboratory facilities for the Andragogy Life Sciences (ALS) team to set up workstations and arranged classrooms for the participants. Ms. Rittika Dutta, Research Assistant at Andragogy Life Sciences, briefed the attendees about the four-day skill enhancement and hands-on training programme along with Prof. Chatterjee of Gurudas College.

The participants were divided into four groups (15 participants in each group) for effective instruction and participation. The day's activities began with theoretical lectures on Thin Layer Chromatography, followed by a practical hands-on session. The participants displayed satisfactory results in their practical execution. Subsequently, Protein Purification by organic solvent was conducted in the latter half of the day, culminating in sample preparation for SDS-PAGE.


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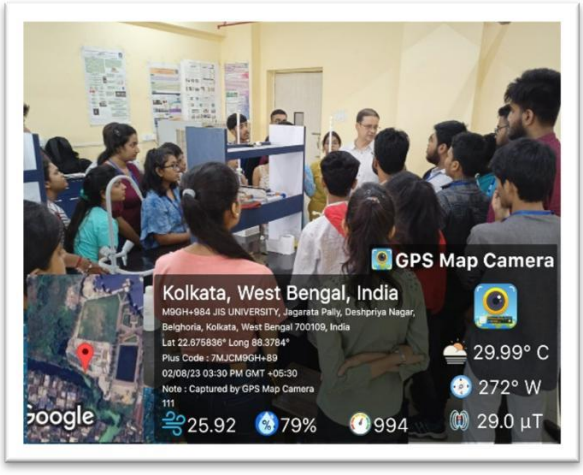
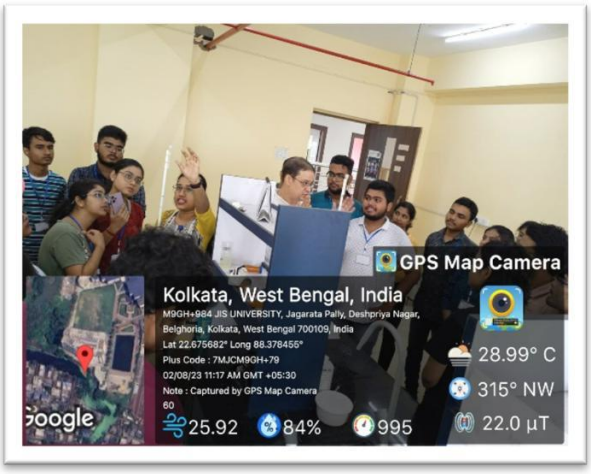
Day 2 [2nd August, 2023]

The second day of the training program commenced with instructional sessions on Gel Filtration Chromatography and Affinity Chromatography. To ensure optimal engagement, the participants were divided into two groups under two instructors. While one group participated in the Gel Filtration Chromatography experiment, the other group received insights and lectures related to the experiments planned for Day 3. After the successful completion of the Gel Filtration Chromatography experiment, the separated proteins were stored at -20°C for subsequent electrophoresis.

A similar pattern was followed for the Affinity Chromatography experiment. Both purified enzymes and crude mixtures were quantified using a UV-VIS spectrophotometer. Samples for electrophoresis were prepared using a subset of the crude and purified enzymes.



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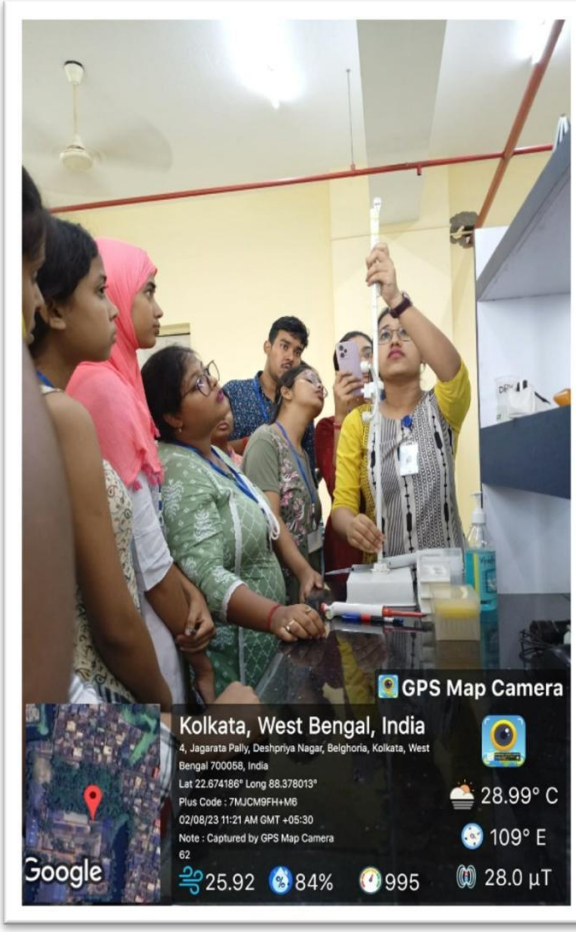
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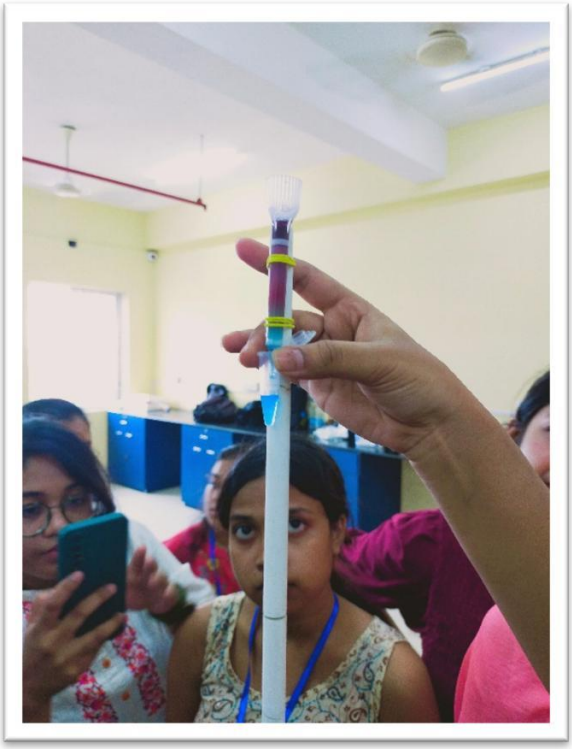


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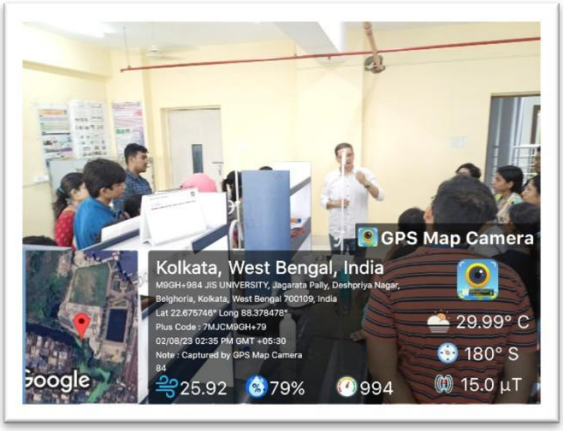
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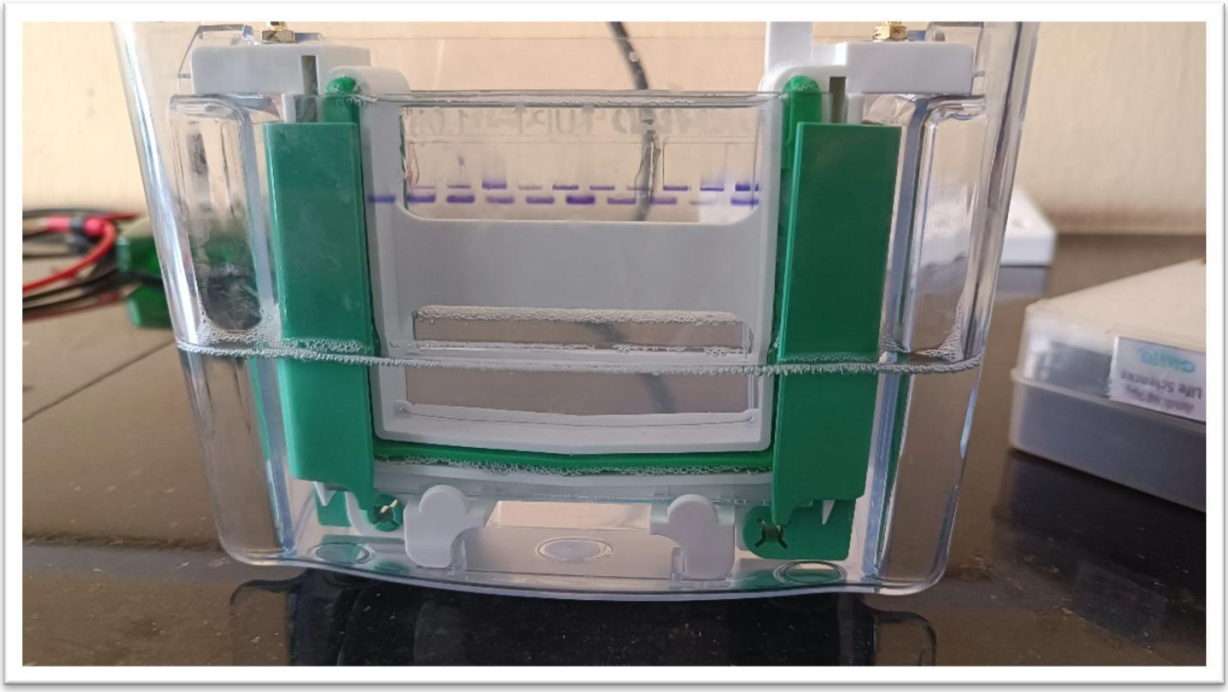
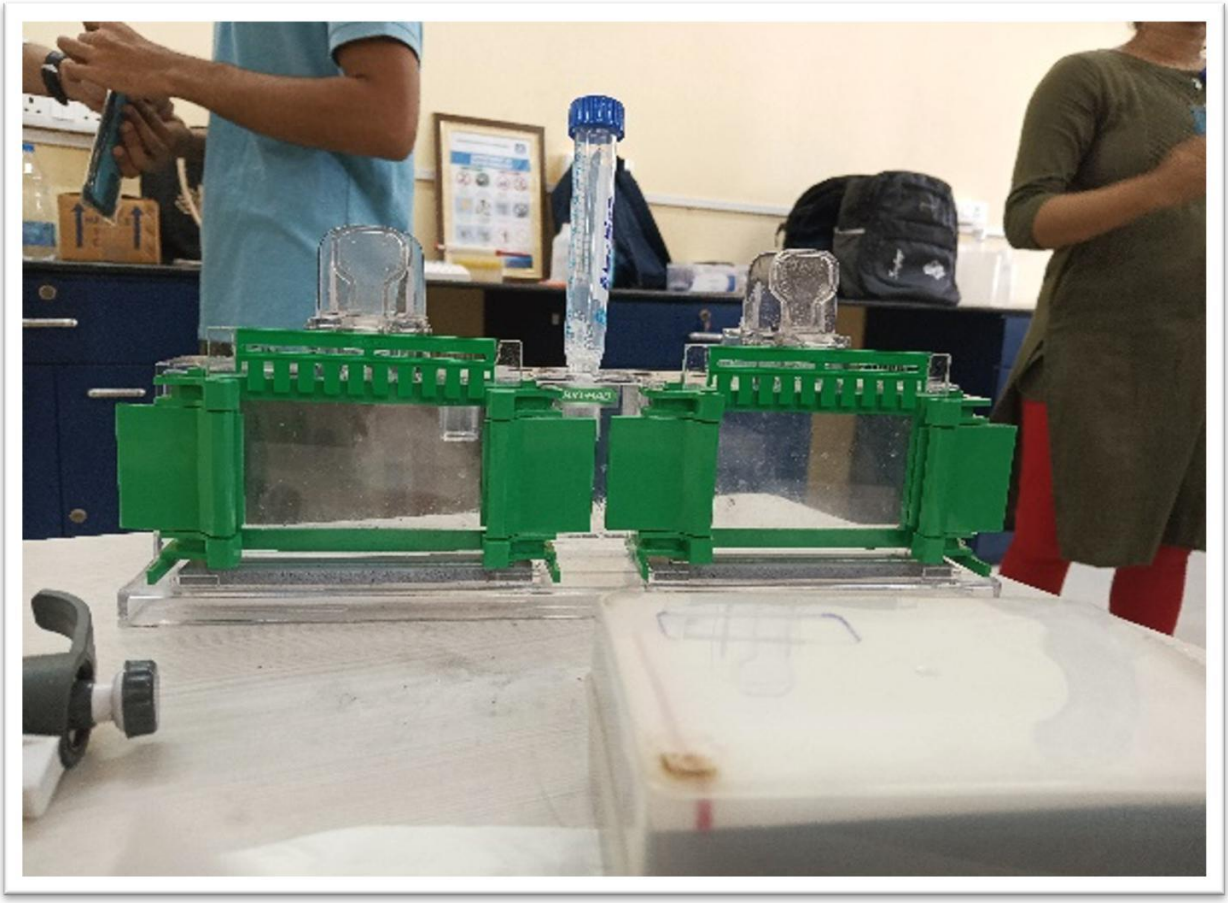
Day 3 [3rd August, 2023]

The third day of the course saw the execution of the SDS-PAGE separation process. Participants were guided through the assembly of the vertical gel apparatus (BioRad) and the casting of the gel. Each participant was afforded the opportunity to load their samples onto the protein gel. The gels were left for overnight destaining, marking the completion of the practical exercise.



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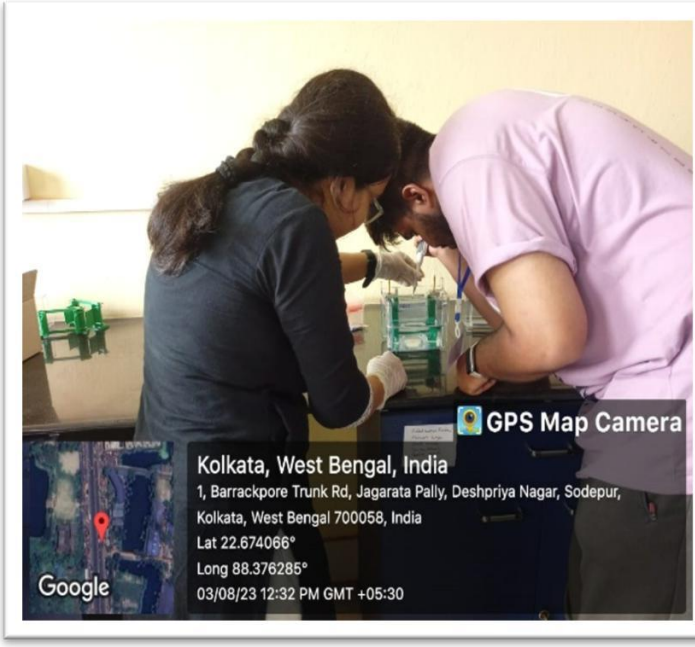
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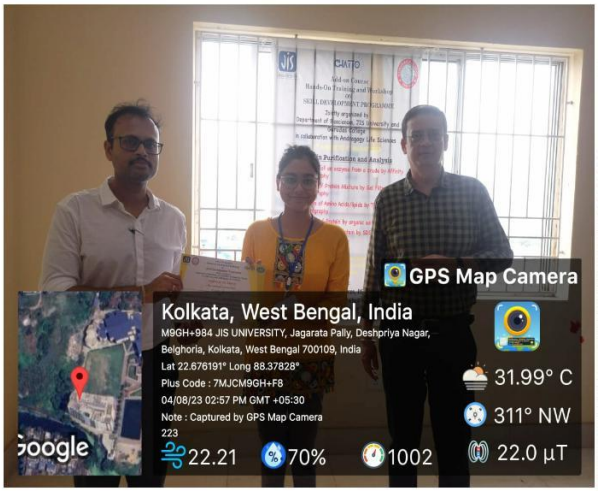
Day 4 [4th August, 2023]

The fourth and final day of the training program commenced with a thorough discussion of the results obtained from the separated proteins on eight protein gels. The protein gel electrophoresis was deemed a success, reflecting the effectiveness of the training curriculum.

In the afternoon, an online evaluation was conducted for the participants via virtual platform. The closing session of the workshop was graced by the presence of Dr. Abhik Acharya Chowdhury from JIS University and Prof. Samrat Chatterjee from Gurudas College. Attendees were encouraged to share their feedback regarding the four days of hands-on training.

At the culmination of the workshop, all participants were awarded participation certificates. Notably, the top three participants were recognized with merit certificates based on their performance in the online /offline evaluation.



Conclusion:

In conclusion, the Add-on Course on skill development provided participants with a comprehensive and practical understanding of various chromatography techniques and protein analysis methods, as received in the feedback form submitted by the participants (anonymously). The collaborative efforts of JIS University and IQAC, Gurudas College along with Andragogy Life Sciences, instructors, and participants contributed to the success of the programme. The workshop facilitated knowledge acquisition, practical skill development, and meaningful interactions within the scientific community.

RESULTS:

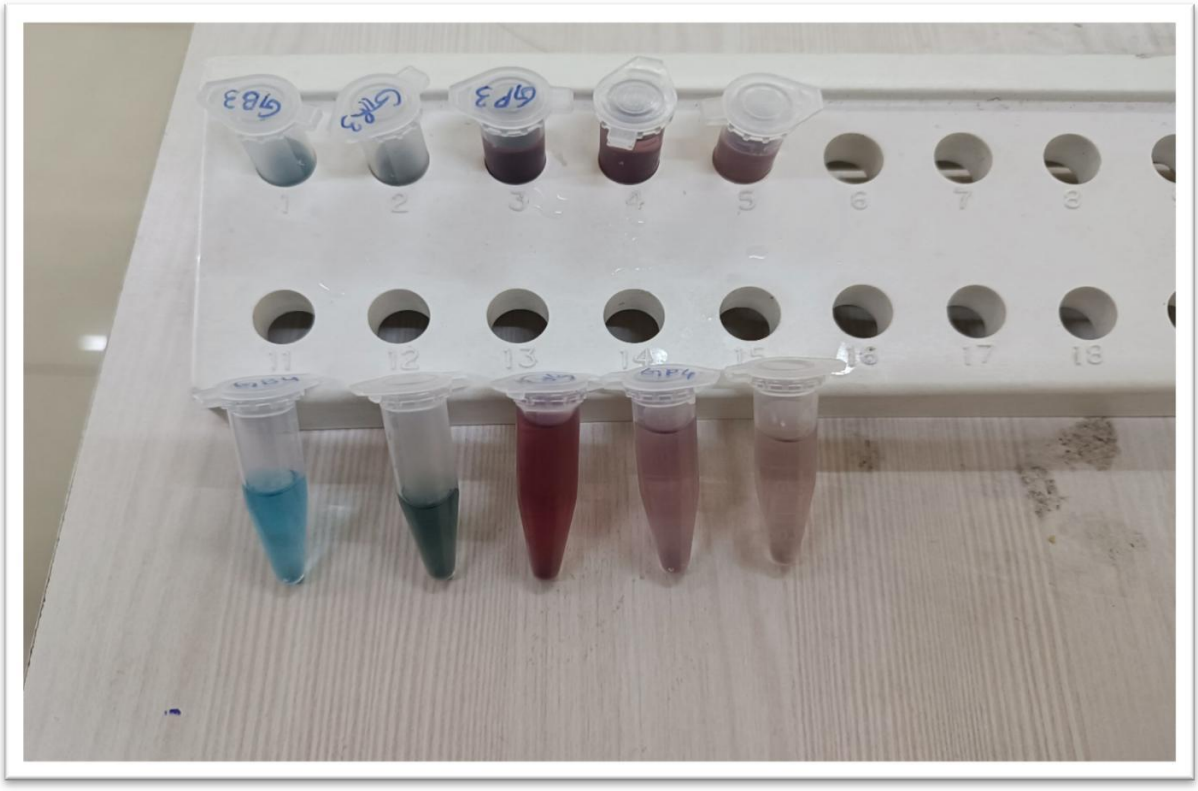


Figure 1 Separated proteins by Gel Filtration Chromatography

Figure 2: Qualitative analysis of purified enzyme by Affinity Chromatography. Crude (L) Purified Enzyme (R).

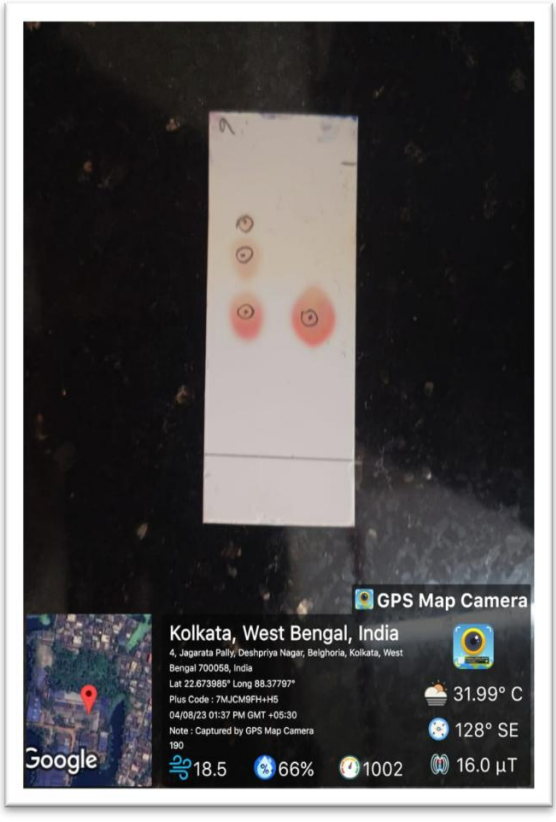
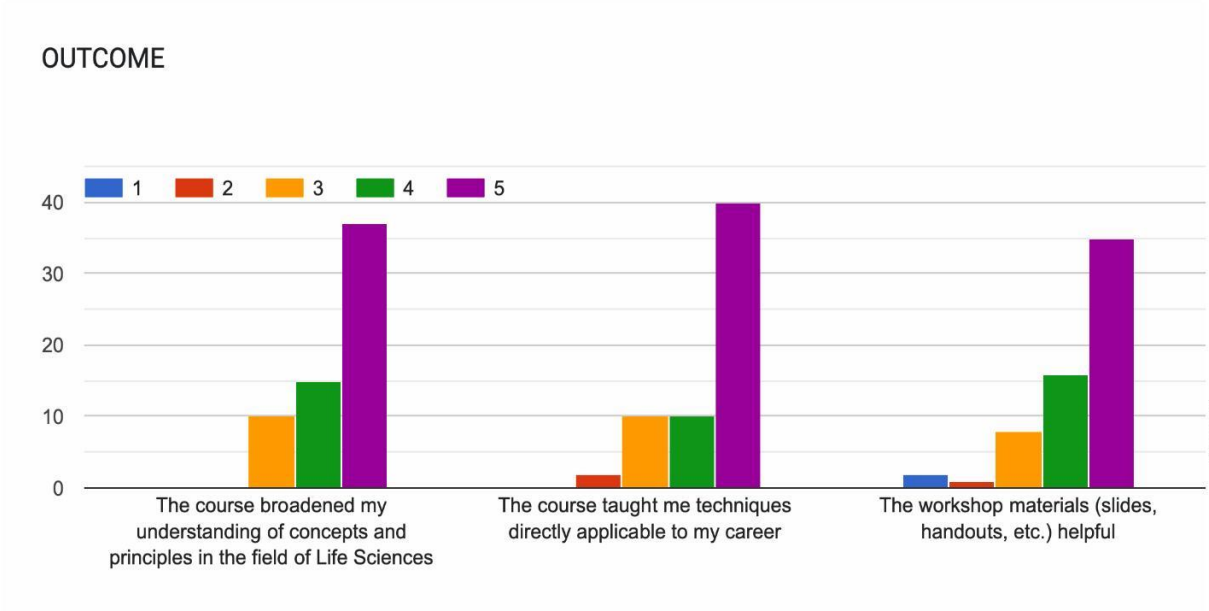


Figure 3: Separation of Amino Acid by Thin Layer Chromatography

Figure 4: SDS PAGE of purified enzyme and crude by Affinity chromatography

Figure 5: Protein Purification by organic solvent

Feedback:


OUTCOME
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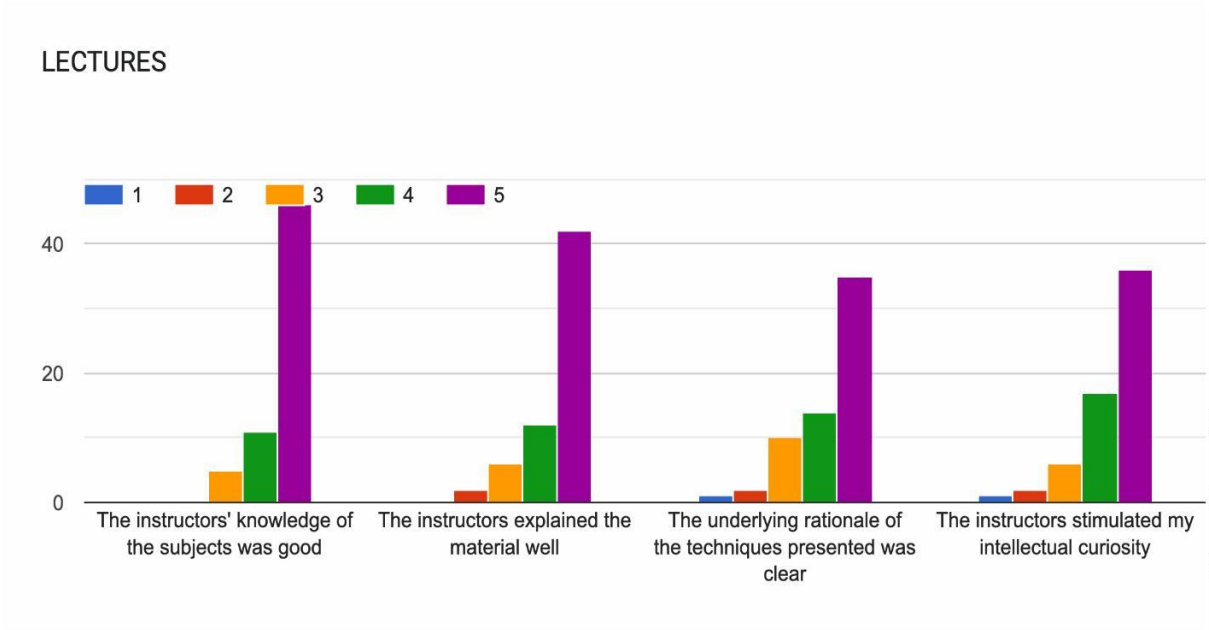
The course broadened my understanding of concepts and principles in the field of Life Sciences
The course taught me techniques directly applicable to my career
The workshop materials (slides, handouts, etc.) helpful


LECTURES
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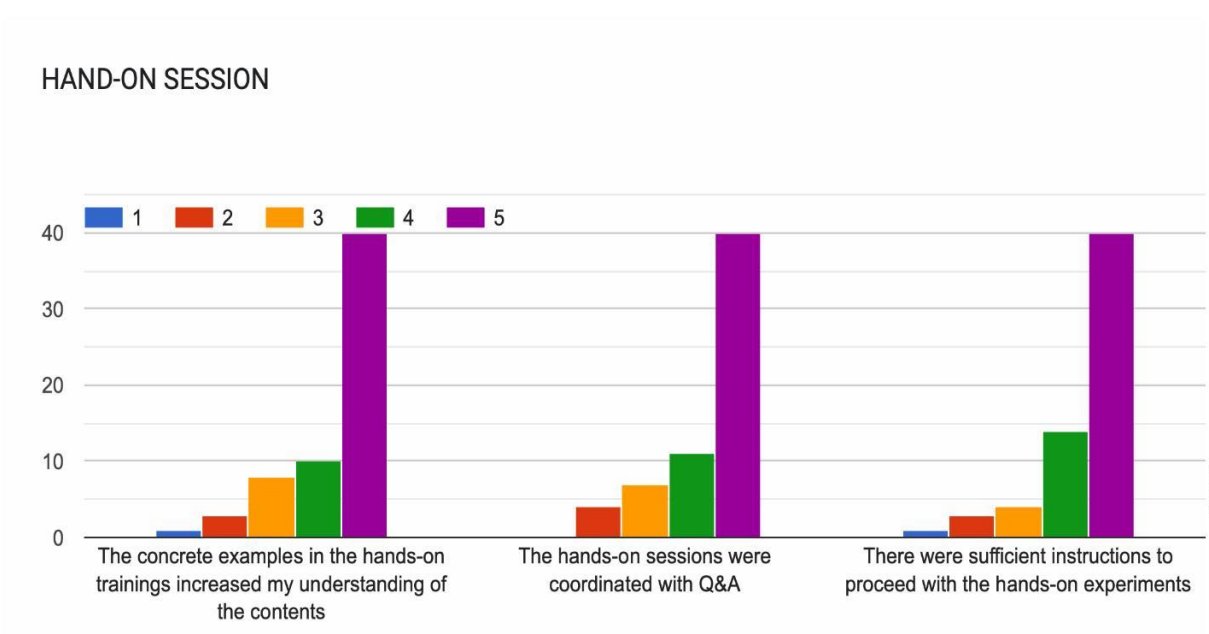
The instructors' knowledge of the subjects was good
The instructors explained the material well
The underlying rationale of the techniques presented was clear
The instructors stimulated my intellectual curiosity


HAND-ON SESSION
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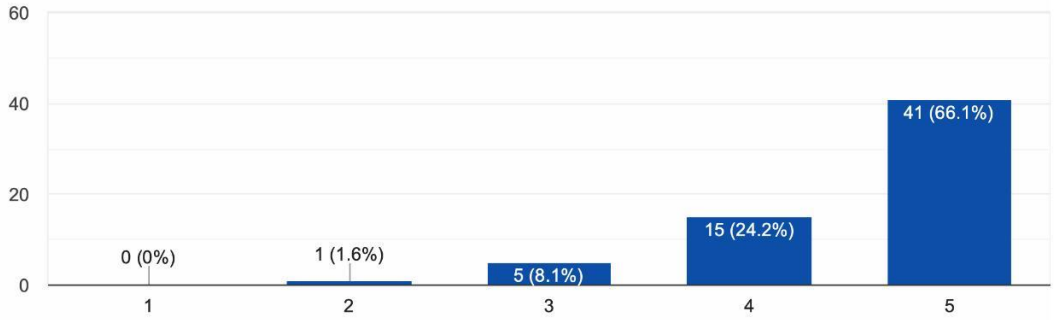
The concrete examples in the hands-on trainings increased my understanding of the contents
The hands-on sessions were coordinated with Q&A
There were sufficient instructions to proceed with the hands-on experiments

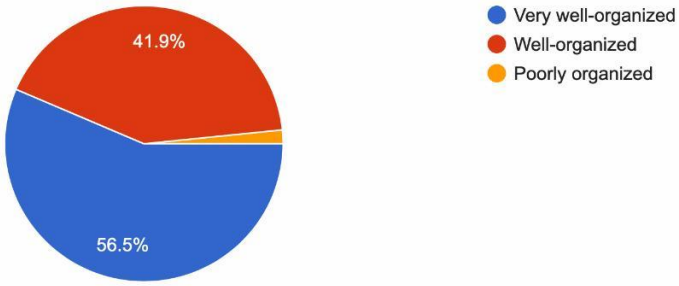
How engaging were the course instructors?

62 responses



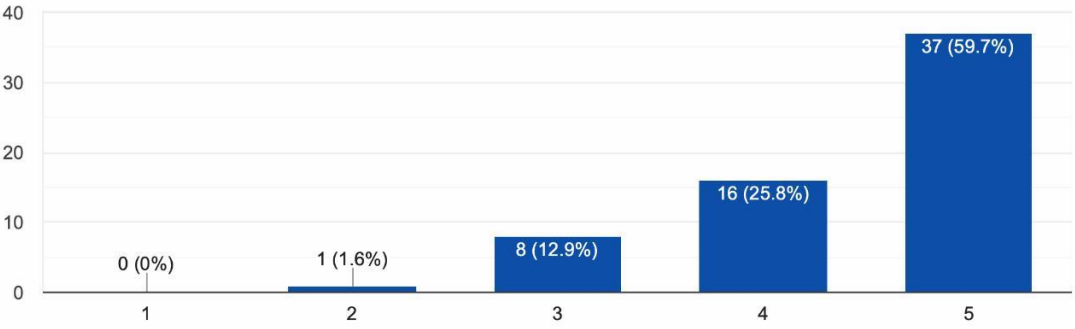
How well-organized was the workshop?

62 responses

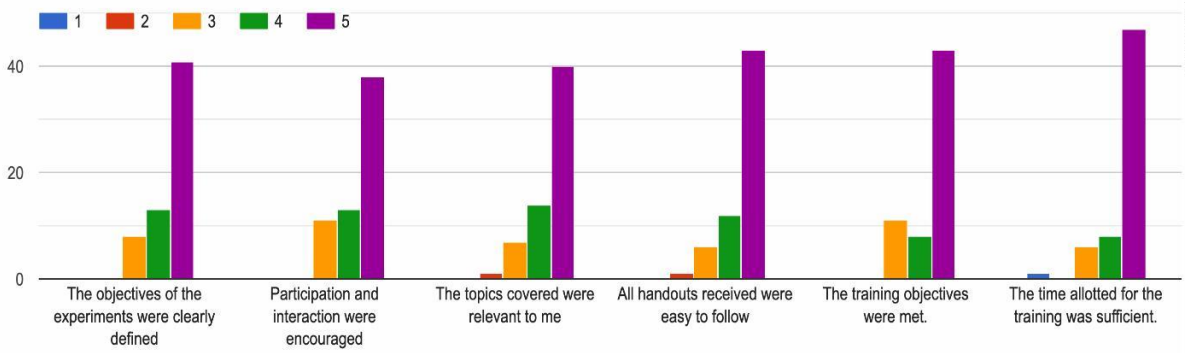


How relevant and helpful do you think it was for your future?

62 responses

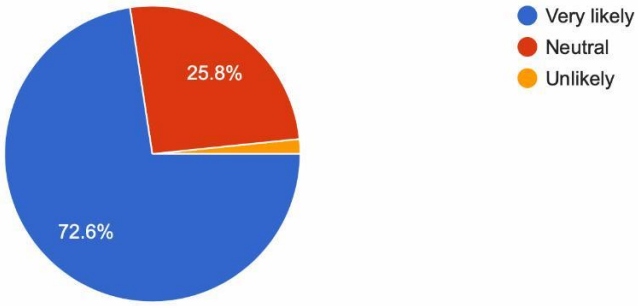


Please indicate your level of agreement with statements listed below.



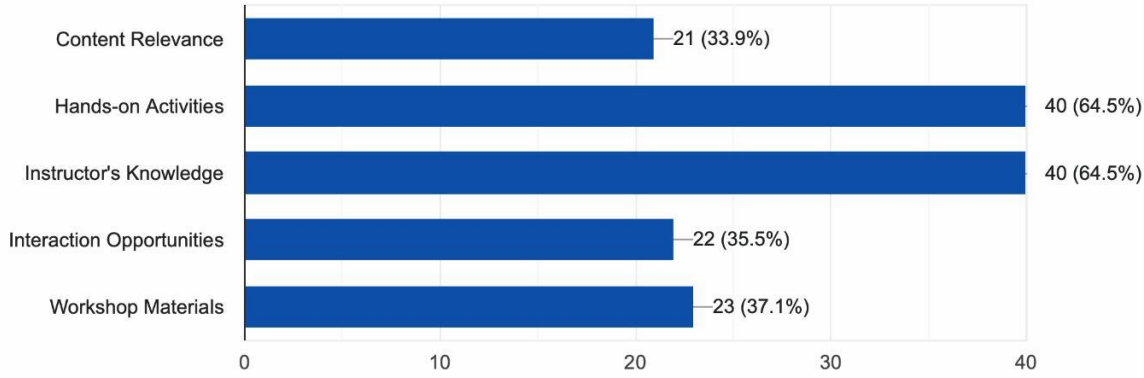
How likely are you to recommend similar workshops to your peers?

62 responses



Which aspects of the workshop did you find most valuable? (Check all that apply)

62 responses



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End of Report