



UGC - HUMAN RESOURCE DEVELOPMENT CENTRE
PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR



Organized

ONLINE MULTIDISCIPLINARY REFRESHER COURSE
BIOLOGICAL SCIENCE

NOVEMBER 14-26, 2022

REPORT

Name of Course/Program:	Online Multidisciplinary Refresher Course in Biological Science	
Name of Contact person from HRDC:	Dr. Arvind Agrawal	
Date of Course/Program:	14.11.2022 to 26.11.2022	
Name of Course Coordinator:	Prof. Swarnlata Saraf, University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur	
Name of Course Co-Coordinator:	Prof. Preeti K. Suresh, University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur	
Theme of Course/Program:	Modern tools and techniques in biology - concepts and applications	
Number of Participants:	33	
State-wise number of participants:	C.G. – 28, West Bengal – 02, Maharashtra – 01, Madhya Pradesh-02	
Gender-wise number of participants:	Male – 16, Female - 17	
Number of Resource Persons	30	
Name and Signature of Course Coordinator		
Prof. Swarnlata Saraf University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur	Prof. Preeti K. Suresh University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur	Dr. Arvind Agrawal Assistant Professor HRDC, Pt. RSU, Raipur (C.G.)

Multidisciplinary Refresher Course in Biological Science (14.11.2022 - 26.11.2022)

A multidisciplinary refresher course on “Biological Science” was organized by Human Resource Development Centre, Pt. Ravishankar Shukla University Raipur, in collaboration with University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur from 14th -26th, November 2022. The course was attended by thirty-three registered participants from across the country. Thirty resource persons delivered the lectures and engaged the sessions during the program.

ORGANIZING TEAM



Prof. K. L. Verma
Vice Chancellor
Pt. Ravishankar Shukla University,
Raipur (C.G.)



Dr. Shailendra Saraf
Director-HRDC,
Pt. Ravishankar Shukla University,
Raipur (C.G.)



Prof. Swarnlata Saraf
(Course Coordinator)
Univ Inst. of Pharmacy,
Pt. Ravishankar Shukla
University, Raipur (C.G.)



Prof. Preeti K Suresh
(Course Coordinator)
Univ. Inst. of Pharmacy,
Pt. Ravishankar Shukla
University, Raipur (C.G.)

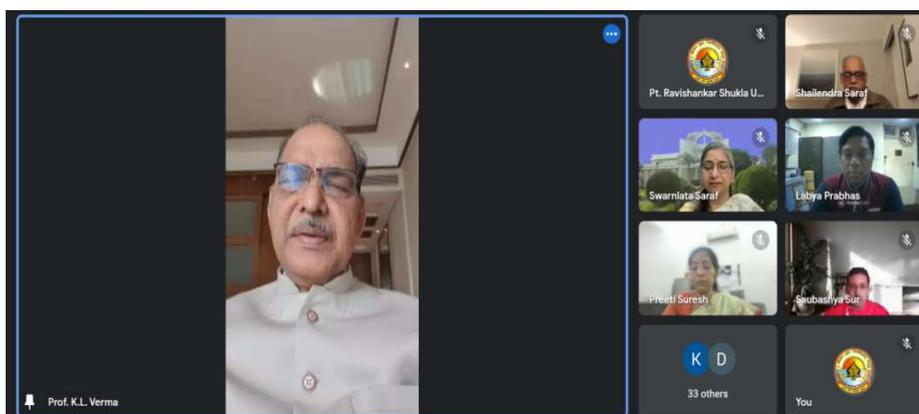


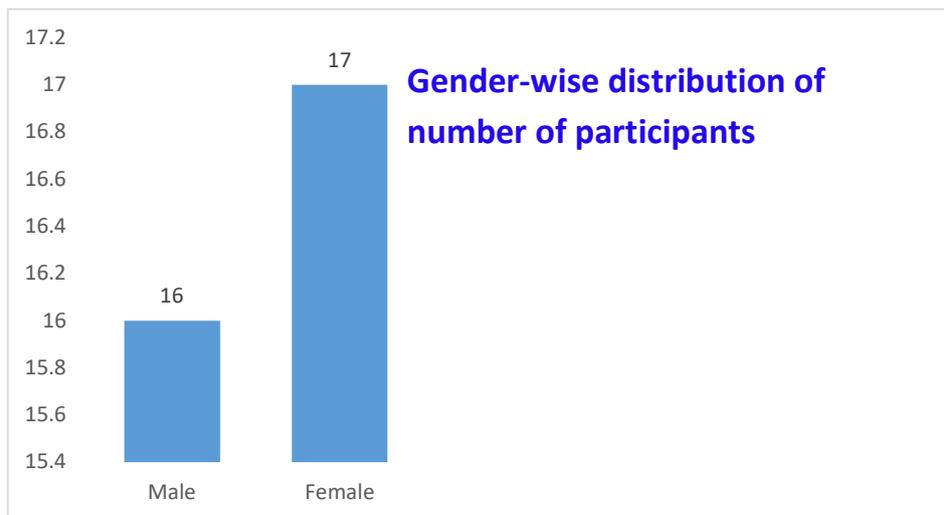
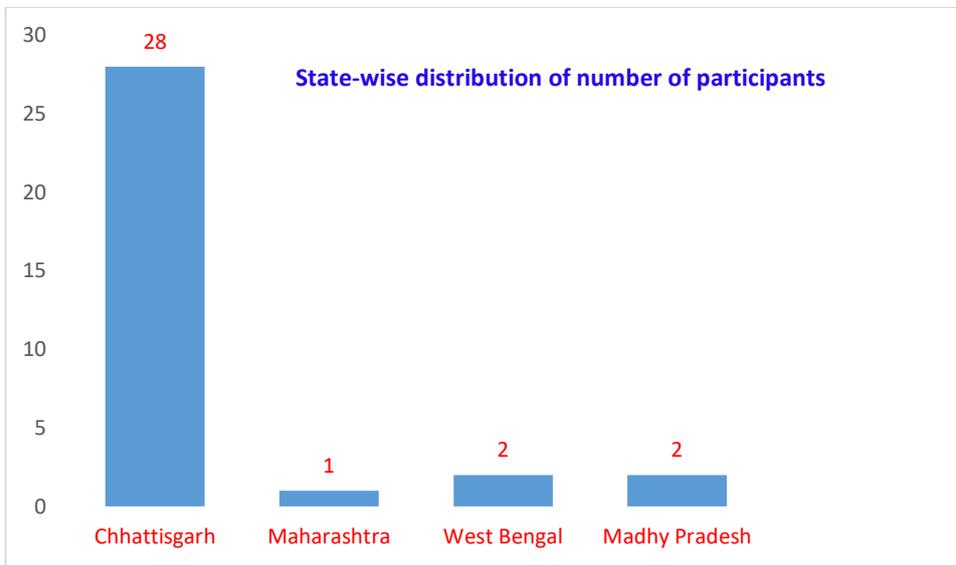
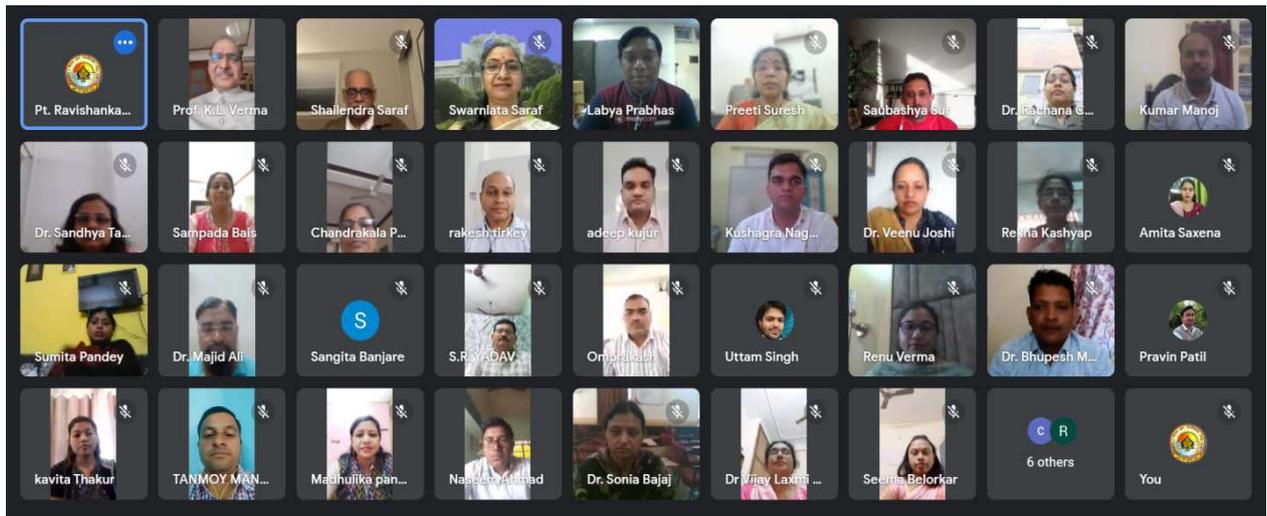
Dr. Arvind Agrawal
(Coordinator from HRDC)
Pt. Ravishankar Shukla
University, Raipur (CG)

DAY 1

Session I (10.30-12.00) Inaugural Function

The program commenced with the Inaugural Session at 10.00 a.m. with Hon'ble Vice Chancellor Prof. Keshari Lal Verma, Pt Ravishankar Shukla University, Raipur as the Chief Guest. The course was organized under the direction of Prof. Shailendra Saraf, Director, Human Resource Development Center, Pt Ravishankar Shukla University, Raipur, and coordinated by course coordinators Prof. Swarnlata Saraf, Director, University Institute of Pharmacy, Pt Ravishankar Shukla University, Raipur and Prof. Preeti K. Suresh, University Institute of Pharmacy, Pt Ravishankar Shukla University, Raipur. At the outset, the guest and participants were extended a warm welcome. The session proceeded with the self-introduction of the participants. Prof. Preeti K Suresh apprised on the objectives of the refresher course and shared that the course has been designed to acquaint the participants on a range of topics within the realm of the theme of modern tools and techniques in Biology. Prof. Swarnlata Saraf addressed the gathering and underlined the relevance of the course in updating with the developments in their domain area. Prof. Shailendra Saraf in his address stressed on the relevance of educators and their role in effective teaching learning. It is critical for the teachers to prepare and adapt themselves for the future learners through a collaborative approach. Prof. Keshari Lal Verma delivered the inaugural address, focusing on the emergent need to equip the serving faculty members with the advances that may go beyond the conventional discipline of biological science. He reiterated that such courses assist the faculty members to keep abreast with the latest developments to better prepare the students for innovation. The inaugural session ended with the vote of thanks proposed by Dr. Arvind Agarwal, course coordinator from HRDC.

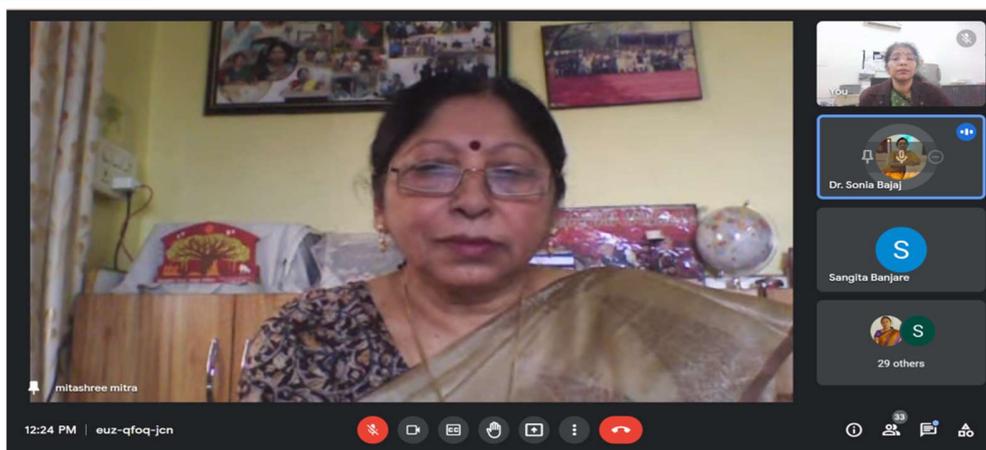




Session II (12:15 to 13:45)



1. The second session commenced with the introduction of the resource person Dr. Mitashree Mitra (Retd. Prof., School of Anthropology, Pt. Ravishankar Shukla University, Raipur). Dr. Mitra delivered a talk on the topic “Chronic Obstructive Pulmonary Disease (COPD) in Chhattisgarh: Analysis using advance biological tools”. This study was the first of its type conducted in the state of Chhattisgarh. Dr. Mitra explained the four stages of COPD and her research design on the anthropological fieldworks in varied population of the state. Additionally, the questionnaire session followed her lecture.



Session III (14.15 to 15.45)



2. The third session started with the lecture of Prof. Naveen G. Kango (Head, Dept. of Microbiology and Director – Academic Affairs, Dr. Hari Singh Gaur Vishwavidyalaya Sagar MP) on “Microbial diversity and significance”. At the backdrop of history and development of the science of microbiology, he gave a detailed overview of the diversity of microorganisms and its importance. Microorganisms are the richest inventory of living molecular diversity with 60% of the total biomass and almost all basic ecosystem processes are dependent on them.

Microbial diversity with its wide variety offers a treasure of resources as drugs, antibiotics, enzymes, among others. Dr. Kango highlighted the new molecular tools that are enablers in understanding the microbial life, rapidly exploring the microbial diversity and defining their evolutionary relationships.

Session IV (16.00 to 17.30)



3. The last session of the day had Prof. Satish K. Verulkar (Head, Dept of Plant Molecular Biology & Biotechnology, Indira Gandhi Krishi Vishwavidyalaya, Raipur) as a resource person and he delivered a talk on “Genome Editing using CRISPR Technology”. He lucidly explained the Clustered regularly interspaced short palindromic repeats-associated protein (CRISPR-Cas) technology. The development of antiviral defense mechanisms by bacteria, and the benefits of CRISPR as a valuable, robust, efficient and cost-effective tool in plant genome

editing for improving crop cultivars as compared to conventional breeding was dealt upon.

DAY 2

Session I (10.30-12.00)



4. Invited talk was delivered by Dr. Ashwini K Dixit (Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur on the topic “Nutraceuticals and immunomodulatory herbal medicine”. Dr. Dixit explained the fundamental principles of Ayurvedic nutrition in his lecture. He discussed about food practices in the Sushruta Samhita, Charaka Samhita, and dietary requirements for the Vata constitution, Manda, Peya, and Yavagu and Vilepi. Other parameters such as preventive strategies, nutrition classification, side-effects of synthetic immunomodulators, nutraceuticals, prebiotic and probiotic safety, and their toxicity considerations, various home remedies such as Brahmi, Onion, Green tea, Moringa, Turmeric, and Noni juice and their role in various disease were also discussed.

Session II (12.15-13.45)



5. In the second session of the day, Prof. Zenu Jha, Department of Plant Molecular Biology and Biotechnology, Indira Gandhi Krishi Vishwavidyalaya, Raipur dwelt upon the topic “Haploids in Crop Improvement: Concept and Applications”. Prof. Jha described the breeders that can evaluate the DH line with better speed, traditional vs. double haploid method, and its application. Haploid induction, androgenesis, gynogenesis, and parthenogenesis was discussed at length. Mega rice varieties and its multiple examples, the procedure of another culture for haploids and DHs, microspore stage identification, and confirmation of haploids by chromosome counting was also explained. She gave a lucid and in-depth explanation of the haploid and diploid cultures and the participants learned about various methods of crop development, especially rice.

Session III (14:15 to 15:45)



6. The session began with the lecture by Dr. Dileep Vasudevan, Scientist-E and Group Leader, DBT – Institute of Life Sciences, Bhubaneswar, Orissa on “Protein Structure Determination by X-ray Crystallography”. Dr. Vasudevan elaborated the underlying principle of X-ray crystallography based on crystalline atoms causing a beam of X-rays to diffract into several specific directions. A crystallographer can depict a 3D picture of the density of the electrons within the crystals. During the session, protein crystallization method, screening, and different protein crystals were discussed. The session concluded with a brief question answer session to clear any doubts of participants regarding the topic.

Session IV (16:00 to 17:30)



7. The fourth session of Micro-teaching commenced with the formal welcome of the evaluator of the session Prof. Keshav Kant Sahu, Head, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur. The prime objective of the session was to strengthen the teaching skills of the participants. The participants played the role of instructor and presented lessons of 6-minutes duration to their peers. Each participant skillfully presented their microteaching topics. Nine participants delivered lessons on various topics of biological sciences:

No.	Participant's Name	Topic
01.	Madhulika Pandaw	Plantation of Flowering Plant
02.	Dr. Vijay Laxmi Naidu	Enzymes
03.	Dr. Rachana Choudhary	Genetic Code
04.	Dr. Sonia Bajaj	Cell Division
05.	Dr. Anmoy Mandal	Pesticides
06.	Dr. Kavita Thakur	Skin
07.	Dr. Irfan Ali	Cell Cycle
08.	Dr. Neethu Raj Panickar	Laws of Limiting Factors

Day 3

Session I (10.30-12.00)



8. Dr. Jagat Roy, Professor & Head, Department of Zoology, Banaras Hindu University, Varanasi delivered a lecture on “Cell division and cancer: special reference to human papillomavirus-induced cervix cancer”. Dr. Roy began his presentation by providing a brief but interesting introduction to the chromosome, DNA replication, transcription, and translation. Then he moved on to genetic diseases and disorders, emphasizing how mutations are the primary cause of genetic disorders. Images of the phenotypic impact of chromosomal mutations in humans and mice were presented. Dr. Roy continued his presentation by elaborating on the cell cycle and the distinction between healthy cells and cancer cells.

Session II (12.15-13.45)



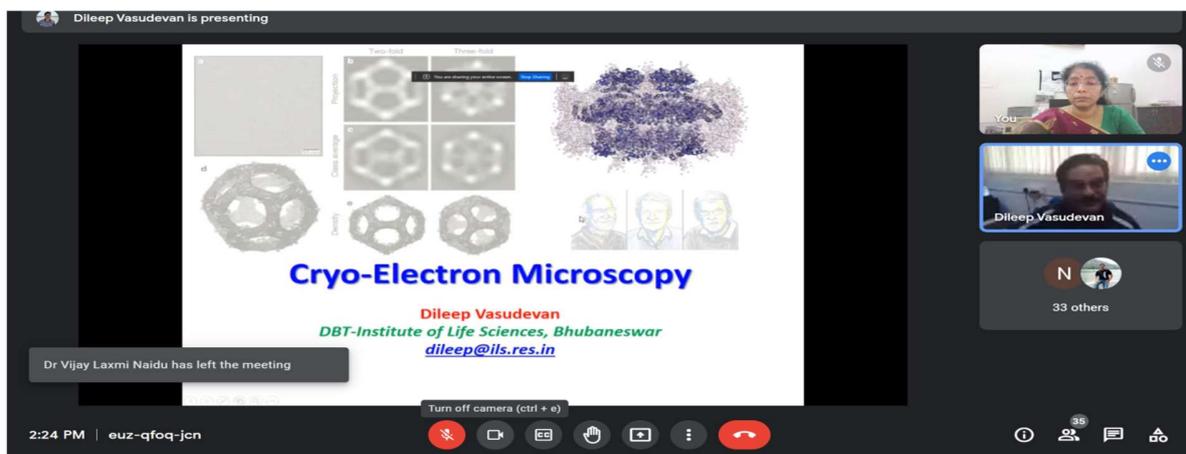
9. The resource person for the session was Dr. Anand Kar, Senior Professor and Head, School of Life Sciences, Devi Ahilya University, Indore, Madhya Pradesh, India. Dr. Kar discussed the hypothyroidism's symptoms, prevention, and treatment. He began his lecture by discussing the anatomical and histological structure of the thyroid gland, thyroid hormones (T3, T4, Thyro-calcitonin, and Rt3), and hormonogenesis. Dr. Kar explained the effects of overproduction and underproduction of thyroid hormones and the kidneys' role in hormone regulation. He discussed thyroid abnormalities, including hypothyroidism, cretinism, myxedema, simple goiter, Hashimoto thyroiditis, and hyperthyroidism. Lethargy, inactivity, weakness, intolerance to colds, weight gain, loss of appetite, thick skin, rough voice,

and constipation are major symptoms of hypothyroidism, and the importance of regular medication and checkups for hormone level detection was emphasized. Thyroid hormones are also affected in reproduction and pregnancy. He also discussed the importance of iodine in normal metabolism by citing the prevalence of simple goiter in Himalayan women due to low iodine intake. Dr. Kar explained how plant extracts help raise T3 hormone production in the body (e.g. Ashwagandha, C. mukul). After a brief discussion, Dr. Anand Kar answered participants' queries.



Session III (14:15 to 15:45)

10. The resource person for the third session of the day was Dr. Dileep Vasudevan, Scientist E & Group Leader, DBT Institute of Life Sciences, Bhubaneswar, Orissa. He delivered his talk on the topic “Cryo-Electron Microscopy”. Dr. Vasudevan discussed the structure, function, uses, and advantages of the revolutionary technique of cryo-Electron Microscopy for determining the 3D shape of the proteins. This technique involves flash-freezing solutions of proteins or other biomolecules and then bombarding them with electrons to produce microscope images of individual molecules. These are then used to reconstruct the 3-D shape, or structure of the molecule. Such structures are useful for uncovering how proteins work, how they malfunction in disease and how to target them with drugs. He also dwelt upon the challenges faced and possible solutions.

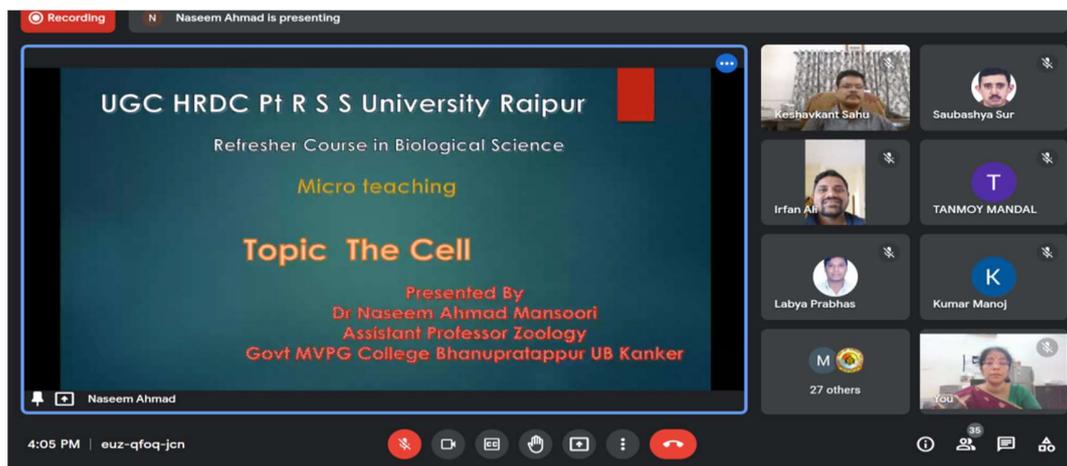


Session IV (16:00 to 17:30)



11. The session on microteaching commenced with the formal welcome of the evaluator of the session **Prof. Keshav Kant Sahu**. The prime motive of the session was to evaluate the teaching skills of the participants in the given timeframe. The participants performed the task on different topics of their individual choice from the domain of biological science. While evaluating the participants on their respective topics, Prof. Sahu gave critical inputs regarding microteaching and shared some useful tips.

S. No.	Name of participant	Topic
1	Dr. Naseem Ahmad Mansoori	The Cell
2	Smt. Rajeshwari Verma	Migration in Fishes
3	Dr. Pravin Dinkar Patil	Double Fertilization in Plant
4	Dr. Chandni Afsana	Conjugation in Bacteria
5	Dr. Bhupesh Kumar Keshorao Mendhe	Growth Curve in Biology
6	Dr. Seema Anil Belorkar	MALDI TOF MS
7	Smt. Renu Verma	Bird Migration
8	Mr. Uttam Singh	Diabetes Mellitus



Day 4

Session I (10.30-12.00)



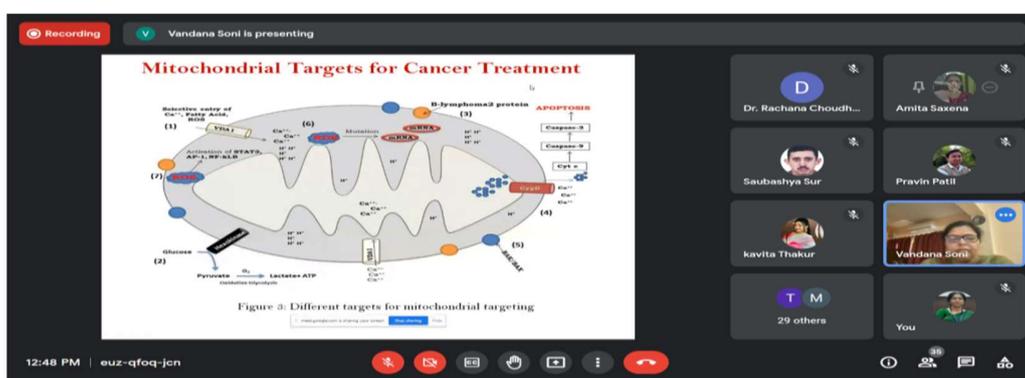
12. In this session, Prof. Jagat Roy, Head, Department of Zoology, Banaras Hindu University, Varanasi (UP) delivered his lecture on “Cell division and cancer: special reference to human papillomavirus-induced cervix cancer”. Dr. Roy discussed that recycling members, including Rab11a, Rab11b as well as their effectors play an important role in the cancers of multiple lineages. Mutation or inactivation of any of the DNA repair genes, tumor suppressor genes or genes of regulatory pathways pave the way for accumulation of mutated cells causing cancer.

Session II (12.15-13.45)



13. The second session of the day was conducted by Prof. Vandana Soni, Head, Department of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.) on “The subcellular targets as molecular determinants for the improved delivery of anticancer drugs”. Dr. Soni explained how the cancer cells are heterogeneous having distinct features as compared to normal cells, and cancer cells have different and complementary metabolic profile, microenvironment and adopting behavior to generate more ATP to fulfill the high energy requirement for cell survival, growth and proliferation. These metabolic differences of the cancerous cells may be a promising strategy

for designing treatment modalities. Dr. Soni elaborated on the various targets of subcellular organelles at molecular levels.



Session III (14:15 to 15:45) & Session IV (16:00 to 17:30)



14. The afternoon session of the day was reserved for the microteaching assignments for the participants. Prof. Sanjay. J. Daharwal, University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur was the evaluator of the session. Each participant successfully finished their task one at a time on a topic from their subject domain. Finally, Prof. S. J. Daharwal gave suggestions and recommendations to the participants regarding microteaching.

Day 5

Session I (10.30-12.00)



15. Dr. Shubhini Saraf, Professor, School of Biomedical and Pharmaceutical Sciences, Babsaheb Bhimrao Ambedkar University, Lucknow conducted the session on “Academic tools for writing and Publishing in Science”. The session gave insights on the use of formal languages in academic writing, use of contractions, avoidance of interrogative statements and use of declaration instead and avoiding exaggerations and using generalizations. Various tools to improve academic writing and for basic science applications the use of sci-

finder was suggested by Dr. Saraf. The free tools for the paper search should be followed by a related patents search using google patents to enhance academic writing level. It was also emphasized that the writing in academics and research should always be in line with the market trend and the researcher should always be aware of market demand. Dr. Shubhini Saraf explained the disruptive innovation and its impact on the market by using the example of a digital camera that shifted from reeled camera to reel less camera. Important things which should be taken care of during academic writing were explained. It was suggested not to take references from journals that are of poor quality or not peer-reviewed. She further added that although a review paper is a very good source for the research reference but always searching the primary source develops clarity and authenticity. She described how to conduct a search, save the documents, and use them offline later. Exclusion, she continued, is a crucial step in the search process because it keeps you organized and keeps you clear of confusion.



Session II (12.15-13.45)



16. Dr. Seema Rai, Associate Professor, Department of Zoology, Guru Ghasidas Vishwavidyalaya, Bilaspur conducted the session on “Yogasananas: a tool coordinating 7 chakras, endocrine gland regulating physiological homeostasis”. This session focused on providing knowledge about yoga posture, the seven chakras of the body, and its relation to the endocrine glands according to the yogic system. Dr. Rai observed that overuse of drugs releases free radicals that are responsible for the premature degradation of cells in the body. Imbalances created by lifestyle disorders hamper hormonal secretions and the metabolism of the body creating diseases and disorders. Yoga postures for different glands in the body were explained. The body mechanism is under feedback control. Both positive and negative feedbacks are important for maintaining the homeostasis of the body. The positions of the 7 chakras, significance of colors, and their influence on personalities were discussed. The lecture created awareness regarding the different postures of yoga and their role in activating the chakras inside the body for health benefits.

Session III & (14:15 to 15:45) Session IV (16:00 to 17:30)



17. The two sessions of the day were dedicated to Seminar presentation by the participants. The Resource Person and the Evaluator was Prof. Kavita Thakur, Department of Electronics and Photonics, Pandit Ravishankar Shukla University, Raipur. The basic objective of the session was to provide a platform to the participants to actively engage in group teaching and learning arrangements with respect to specific topics. It not only served as a means of delivering information but also discuss pertinent issues. With interactions and discussion, the activity focused on the analytical, evaluation and observational abilities to facilitate deeper insight and understanding of the various topics.

Seminar presentation was done by 18 participants on various recent topics from the realms of biological science. These included research works on biofertilizers, conservation, biodiversity, entomological characterization, animal behavior, prawn culture, pollen behavior, Mycobacterium ulcerans, COVID-19, and the impact of air pollution on biodiversity. The presentations were enticing, and the participants got to learn about different aspects of biological science. The sessions involved audience participation, and Prof. Kavita Thakur posed several questions. She also gave feedback and suggestions to the participants for improvement.

Day 6

Session I (10.30-12.00)



18. The first session of the day was conducted by Dr. Anand Kar, Senior Professor and Head, School of Life Sciences, Devi Ahilya University, Indore, Madhya Pradesh on “Hypertension and its prevention”. Dr. Kar observed that hypertension has emerged as a global epidemic and is largely uncontrolled and is the leading cause of noncommunicable disease deaths worldwide. The poor control of blood pressure in hypertensive patients is primarily a fallout of the suboptimal adherence, including failure to initiate pharmacotherapy, poor patient compliance on long-term therapy. Dr. Kar highlighted that hypertension is a major cause for stroke, coronary artery disease, cardiac hypertrophy, heart

failure, kidney diseases and macrovascular diseases. Various preventive measure for hypertension were discussed at great length.

Session II (12.15-13.45)



19. Dr. Anshuman Dixit, Scientist-E, Institute of Life Sciences, Bhubaneswar, Odisha conducted the session on ‘From sequence to structure: A story of protein structure modeling’. Proteins as essential macromolecules have vital biological functions. The knowledge of 3D arrangement of the atoms of a protein can provide useful information in deciphering the roles and mechanisms underpinning protein functions. Dr. Dixit gave insights on Bioinformatics, the discipline that addresses the need to manage and interpret the data that in the past decade was massively generated by genomic research.

This discipline represents the convergence of genomics, biotechnology and information technology, and encompasses analysis and interpretation of data, modeling of biological phenomena, and development of algorithms and statistics. Vital aspects of molecular dynamics analysis, virtual screening, protein-structure function studies with special reference to protein kinases were highlighted. Identification of drug targets, roles of RNA in cancer, development of database, drug discovery, molecular dynamics, and structure-function relationships in proteins were also illustrated with case studies.

Session III & Session IV (16:00 to 17:30) and (14:15 to 15:45)



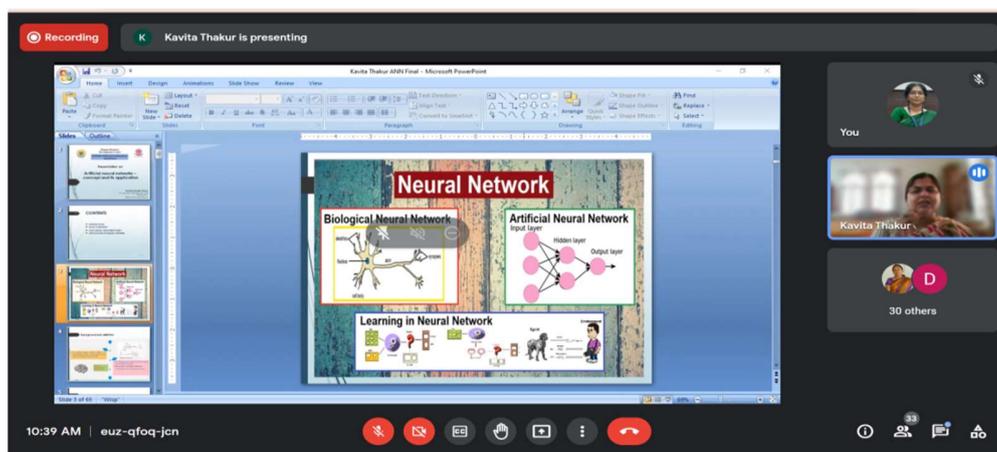
20. Dr. S.K. Jadhav, Professor, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur elegantly monitored and evaluated the two seminar sessions. The participants presented various topics from their domain area. A total of nine participants presented their topics in the first session of the seminar followed by eight speakers in the second session. Prof. Jadhav gave valuable inputs to the participants to further enhance their presentation skills.

Day 7

Session I (10.30-12.00)



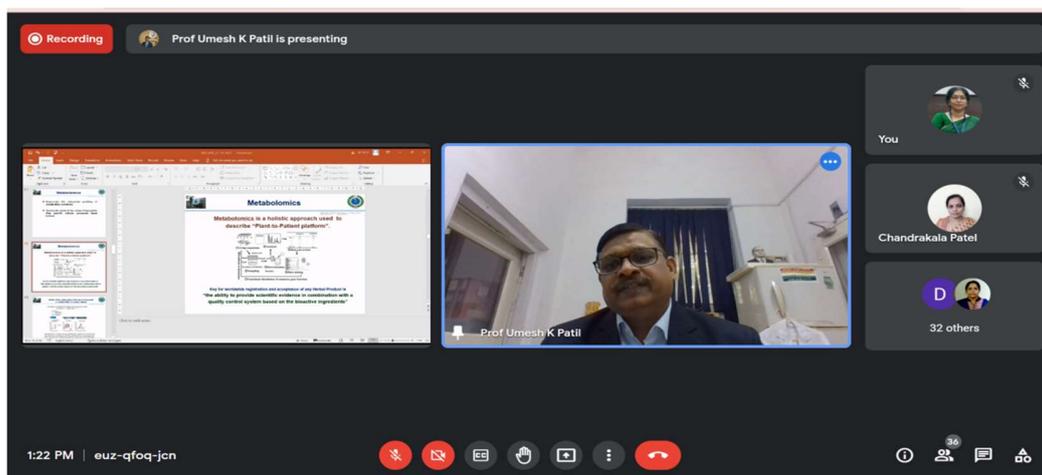
21. The first session of the day was conducted by Prof. Kavita Thakur, Head, SoS in Electronics and Photonics, Pt. Ravishankar Shukla University, Raipur on "Artificial neural networks and its application". Prof. Thakur discussed the artificial neural networks (ANN), their constituents, types, and the number of constituting units depending on the simplicity or the complexity of the system. Even though ANNs have been inspired by the biological nervous system, the gap between them is still very wide. Dr. Thakur also presented an overview of the research status of biological and artificial neural systems. The inevitable challenges in materials and devices to implement bio-realistic neural systems was also dealt upon.



Session II (12.15-13.45)



22. The second session of the day was conducted by Prof. Umesh Patil, Department of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar (MP) on "Potentials of metabolomics and ethnopharmacology in the development of phytomedicinal products. Dr. Patil focused on the herbal and traditional medicines gaining attention around the world for the management of a variety of health problems. Metabolomics and the metabolomics profiling of herbal medicines and medicinal plants have provided new avenues of research in drug development. He also briefed on the traditional AYUSH healers of India.



Session III (14.15-15.45)



23. The resource person for the third session of the day was Prof. Naveen G. Kango, Professor & Head, Department of Microbiology, Dr. Harisingh Gour University Sagar, M.P, who delivered his talk on “Generation of health-promoting prebiotic oligosaccharides using microbial enzyme”. Prof. Kango elaborated on the dynamic ecosystem of the intestine containing friendly and hostile bacteria. He further discussed the benefits of oligosaccharides microzyme in oligosaccharides generation, generation of manooligosaccharides, and hemicellulose derived oligosaccharides.



Session IV (16:00 to 17:30)



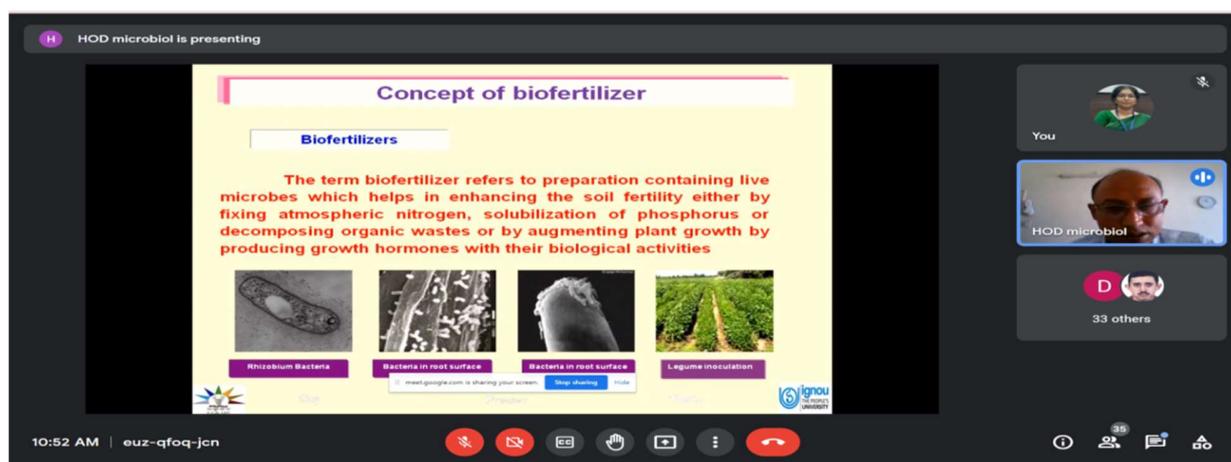
24. The resource person for fourth session of the day was Dr. Sushma Talegaonkar, Associate Professor, School of Pharmaceutical Sciences, Delhi Pharmaceutical Science and Research University, New Delhi. She delivered her lecture on "Biopolymeric nanoparticle in treatment of colon cancer in vitro and in vivo assessment." She discussed in detail about objectives of the study. Different cell line and geotaxis assay was discussed. She described biosafety of blank lignin nanoparticles. Effectiveness of hyaluronic acid coated nanoparticle in killing cancer cells and in vivo reduction in size of tumor using hyaluronic acid coated lignin nanoparticle was also elaborated upon.

Day 8

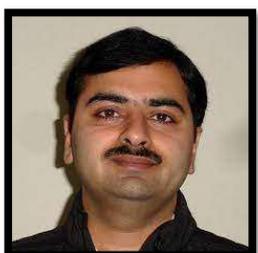
Session I (10.30-12.00)



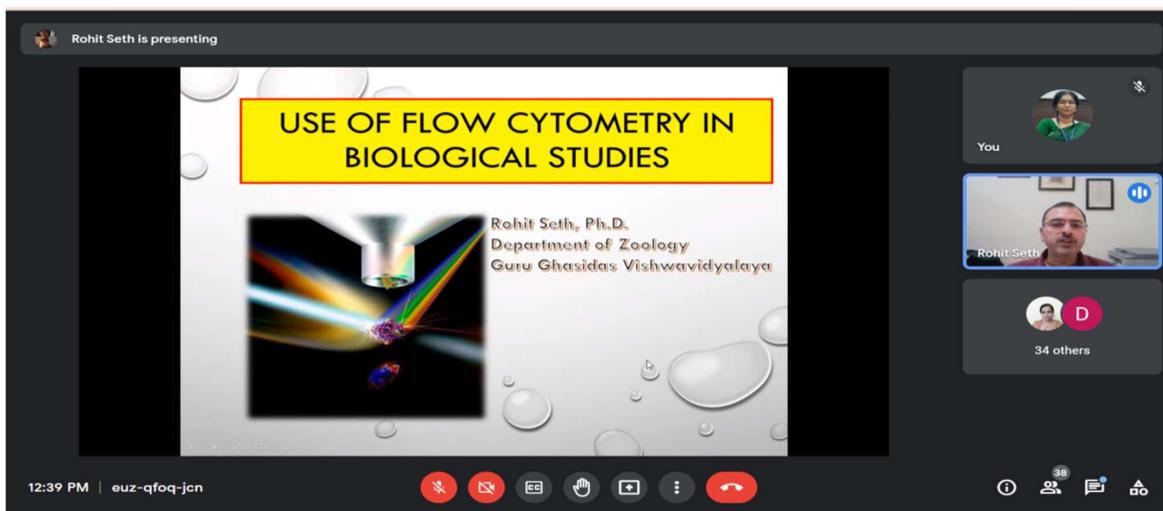
25. The first session of the day was conducted by Prof. Tapas Choudhary on the topic “Role of biofertilizers for sustainability in agriculture”. A few of the important outlines of the presentation were: the fertilizers consumption and food grains production scenario in India, causes of declining crop productivity, sustainability of farmers, deficiency of nutrients in the soil, use of balanced fertilizers and biofertilizers, and comparison to other countries. In comparison to other nations, Dr. Choudhary explained India's stagnant production of food grains in detail. Additionally, he discussed the reasons behind declining crop productivity, balanced fertilizer use, and the ideas, advantages, and advantages of biofertilizers. Later, he talked about various agricultural biofertilizers. He also discussed how rhizobium, azotobacter, azospirillum, PSM, and VAM fix nitrogen and emphasized how VAM affects various crops. He also covered the categorization of biofertilizers according to production technology. He skillfully provided a succinct explanation of the importance of cyanobacteria in the production of BGA culture, Azolla-Anabaena symbiosis, and rice cultivation.



Session II (12.15-13.45)



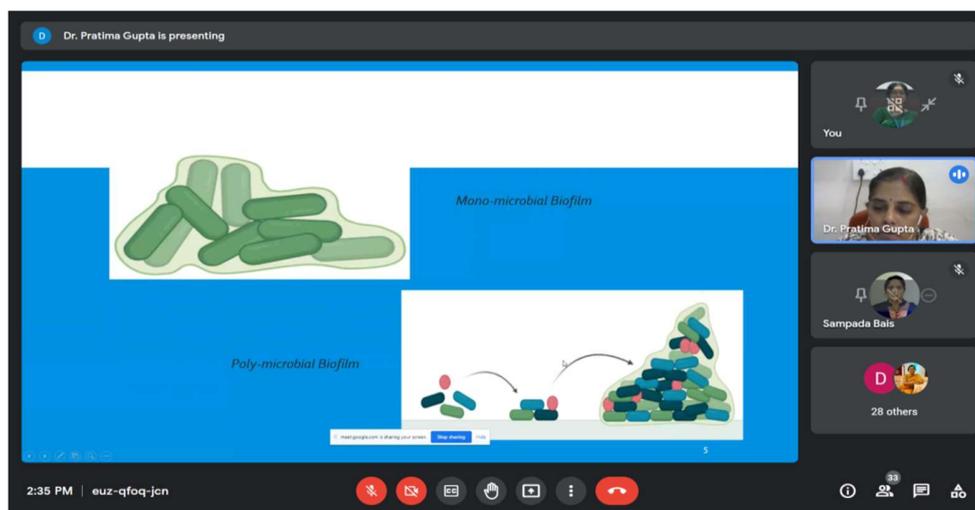
26. Dr. Rohit Seth, Associate Professor, Department of Zoology, Guru Ghasidas University, Bilaspur was the resource person for the second session of the day. Dr. Seth elaborated on “Use of flow cytometry in biology”. His presentation chiefly focused on three aspects viz., history, technical highlights, and application of flow cytometry in cell biology. He explained the stains and fluorescent labeling techniques. The basic principle and instrumentation of flow cytometry were the main focus of his lecture. Flow cytometry provides rapid multi-parametric analysis of single cells in solution. Flow cytometers employ lasers as light sources to produce both scattered and fluorescent light signals that can be reads by detectors. He also explained its limitations with light scattering. On the basis of fluorescent or light scattering characteristics, cell populations can be analysed and/or purified. Dr. Seth observed that the field of flow cytometry has seen significant advances in the last few decades and has emerged as powerful tool in the filed of immunology, molecular biology, bacteriology, virology, cancer biology, among others.



Session III (14.15-15.45)



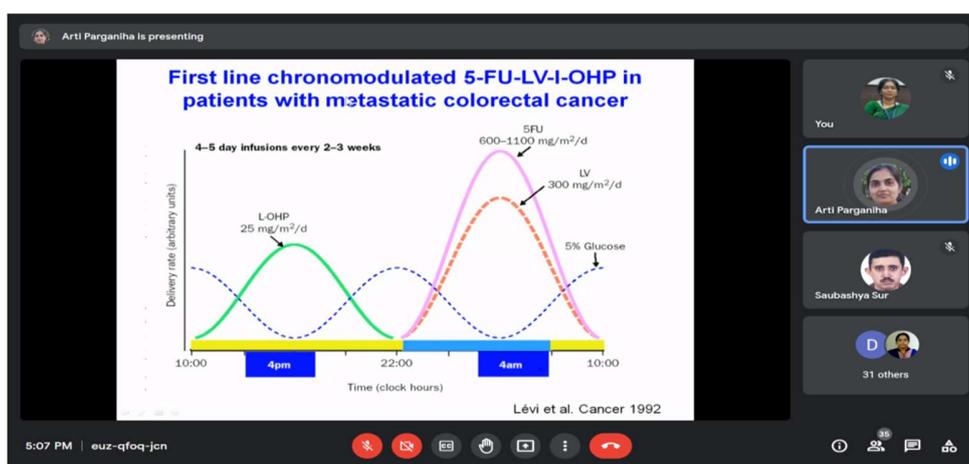
27. The third session was conducted by Dr. Pratima Gupta, Associate Professor, Department of Biotechnology, National Institute of Technology, Raipur. Dr. Gupta gave a detailed overview on the topic “Electrochemical methods for biofilm detection”. Biofilms and their specialties and their role in microbes’ safety were discussed. Biofilms are multicellular communities held together by a self-produced three-dimensional matrix, which is an extracellular polymeric substance in which microbes are embedded. These matrices are produced by microbes and the mechanisms that various bacteria employ to form biofilms vary and may depend on environmental conditions and specific strain attributes. Biofilm is made up of polysaccharides, ions, nucleic acid, and proteins. She further discussed about biofilm detection, which is done in the laboratory by crystal violet staining by Microliter Plate Method in its early phase. The use of natural compounds as antibiofilm was discussed in which further research is required. She also explained non-conventional methods such as flow dry microfluidics.



Session IV (16.00-17.30)



28. The last session of the day was conducted by Dr. Arti Parganiha, Professor, School of Life Science, Pt. Ravishankar Shukla University, Raipur on “Circadian clock, cancer and chemotherapy”. Dr. Parganiha elaborated on the master clock, suprachiasmatic nuclei (SCN) that controls and coordinates the tissue-specific peripheral oscillators via humoral and neural mechanisms. This generates nearly 24 hour physiological and behavioral events, including rest-activity rhythm. She added that in a number of oncological studies, it has been demonstrated that cancer patients show disrupted 24-hour rest-activity pattern and the level of disruption worsens during chemotherapy. The timing of chemotherapeutic interventions for maintaining rhythm parameters may enhance the physiological ability of the patients for better therapeutic outcomes.



Day 9

Session I (10.30-12.00)

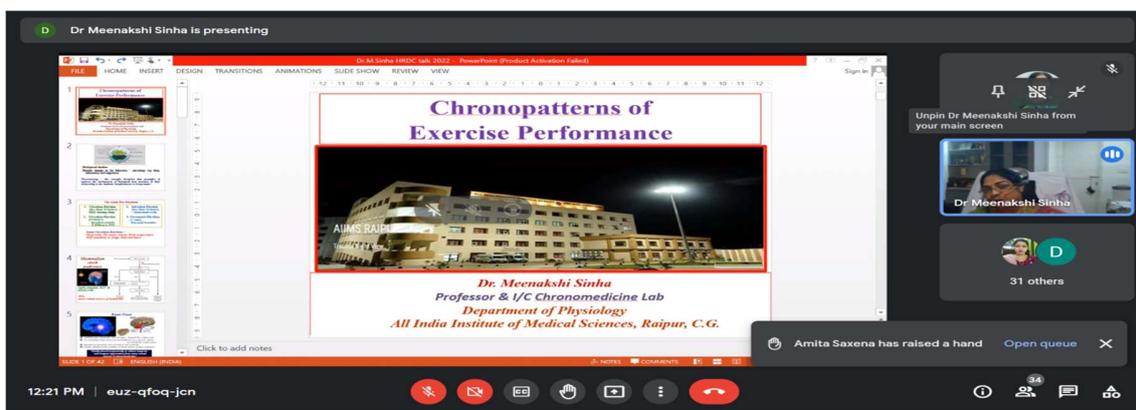


29. The first session of the day was conducted by Dr. Mahendra S. Asawat, Principal and Director, Laureate Institute of Pharmacy, Kathog, Himachal Pradesh. Dr. Asawat elaborated on the “Modern Biological Tools: Dermal Testing” with the introduction and structure of the skin. He pointed out that the skin reflects any kind of disease in the body. A brief overview regarding general skin problems such as wrinkles, dark eye circles, pigmentation, etc. was also given. He added that skin disorders caused by mental stress and pollution can be cured using various technologically advanced tools. He gave a detailed account of various tools used for checking the quality of the skin. He concluded the session with the scope of dermal and cosmetic research.

Session II (12.15-13.45)



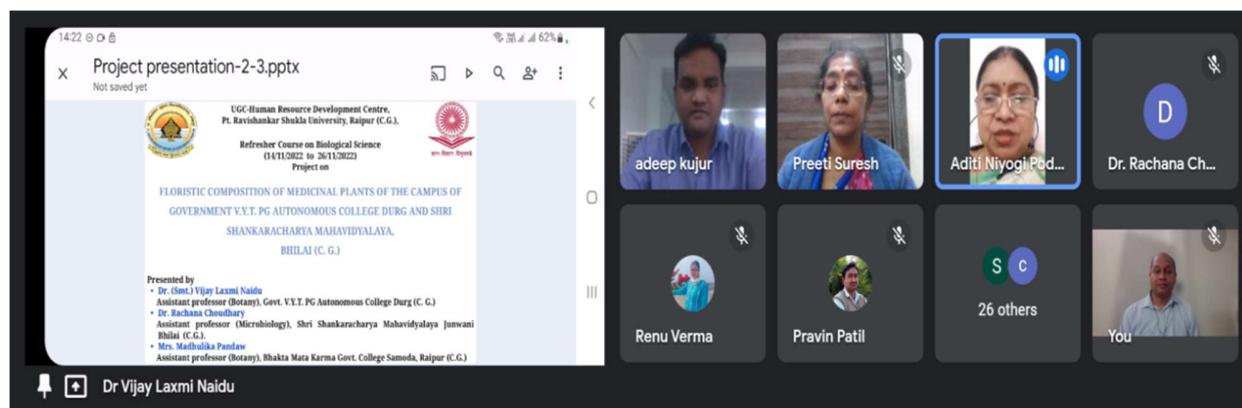
30. The resource person for the second session was Dr. Meenakshi Sinha, Professor, Department of Physiology, All India Institute of Medical Sciences, Raipur. In her talk on “Chronopatterns of exercise performance”, Dr. Sinha briefed on various biological rhythms, such as the circadian rhythm, infradian rhythm, mammalian clock pathways. She reiterated that the pineal gland is the third eye of human brain, whose function is to secrete melatonin. Following that, she discussed chrono-sensitive diseases such as asthma, tooth pain, labour pain, and heart attack. She also emphasized on the significance of exercise and physical activity, and the best time to engage in it since the endocrine and the nervous systems associated with metabolic responses exhibit diurnal variations. Thus, physiological responses may differ depending on the timing of the exercise.



Session III (14.15-15.45) & Session IV (16.00-17.30)



31. The project presentations by the participants were scheduled in the third and fourth sessions of the ninth day. The session was coordinated by Prof. Aditi Poddar, Professor, School of Studies in Life Sciences, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh. The participants were divided into teams for research project presentation at the start of the Refresher Course. The participants from Groups 1-7 presented their projects during this session. The project presentations were on diverse and interesting topics. Each presentation was followed by questions and comments. Prof. Poddar gave valuable inputs and suggestions to the participants on how to choose a topic and deliver it effectively.



Day 10

Session I (10.30-12.00) & Session II (12.15-13.45)



32. Prof. Madan Mohan Chaturvedi, Department of Zoology, University of Delhi conducted the session on “*Regulation of Gene Expression: Linkage Between Metabolism and Epigenetics*”. He discussed on the histones, chromatin and epigenetic codes. He initially emphasized on the lac operon model, its structure and regulation. Thereafter he gave emphasis on the epigenetic modifications of histones, like linkage and metabolism. He explained the structure of core histone proteins, which consist of a globular domain and an unstructured N- or C-terminus tail. The latter is the frequent site for diverse posttranslational modifications and primarily acts as docking site for binding of chromatin interacting machineries. In addition, the unstructured N- or C-terminus tails form the basis of a code called as histone code; and along with DNA methylation, the unstructured tails form the basis of epigenetic inheritance. Prof. Chaturvedi further added that there are pieces of evidence that explain that enzymes histone acetyltransferases, histone methyl transferases, and histone kinases fall into the class of “*writers*” of “*epigenetic marks*” that regulate the expression of genes. There are also the “*readers*” of the epigenetic marks, which include the proteins that contain the chromo-domains and the bromodomains. Moreover, there are “*erasers*” to remove the epigenetic marks that include the enzymes Histone deacetylases (HDACs) and histone demethylase. The molecules required as cofactors for all such modifications are ATP, Acetyl CoA, and S-adenosyl methionine.

Dr. Madan Chaturvedi is presenting

Prerequisite!!!!

- Transcription Unit

Transcription Factor & RNA Polymerase

DNA

Activator

Mediator complex

Chromatin remodeler

HAT

RNA polymerase II

10:57 AM | euz-qfoq-jcn

Prof. Madan M. Cha...
Dr. Madan Chaturvedi...
Saubashya Sur
Amita Saxena
N
Naseem Ahmad
D
Dr. Rachana Choudh...
T S
31 others
You

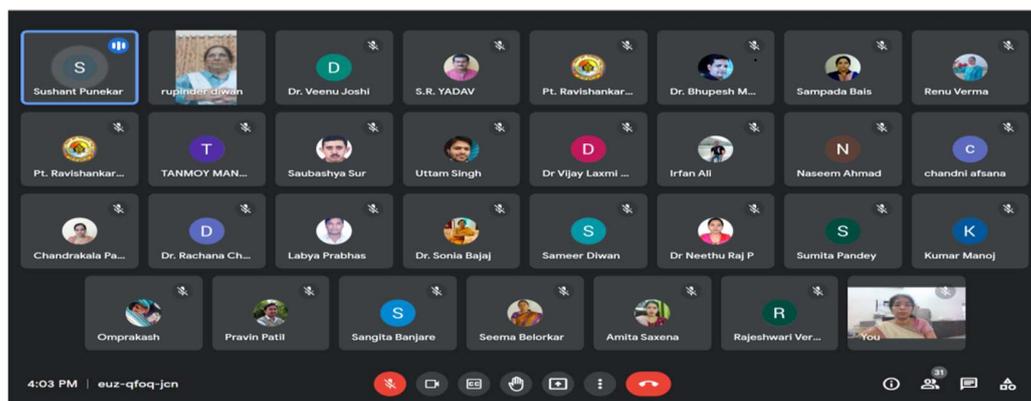
Session III (14.15-15.45)



33. Dr. Anshuman Dixit, Scientist-E, Institute of Life Sciences, Bhubaneswar, Odisha conducted the session on ‘Drug design and Discovery: A primer’. Dr. Dixit gave insights on the drug discovery process where potential new therapeutic entities are identified by employing a combination of computational, experimental and clinical models. The technological advances and a better understanding of the various biological processes and targets have been of great assistance, but still the process of drug discovery remains a lengthy, difficult, costly and inefficient process that is fraught with high rate of attrition. Dr. Dixit focused on the principles of modern drug design and discovery and the potential applications of computational methods.

Session IV (16.00-17.30)

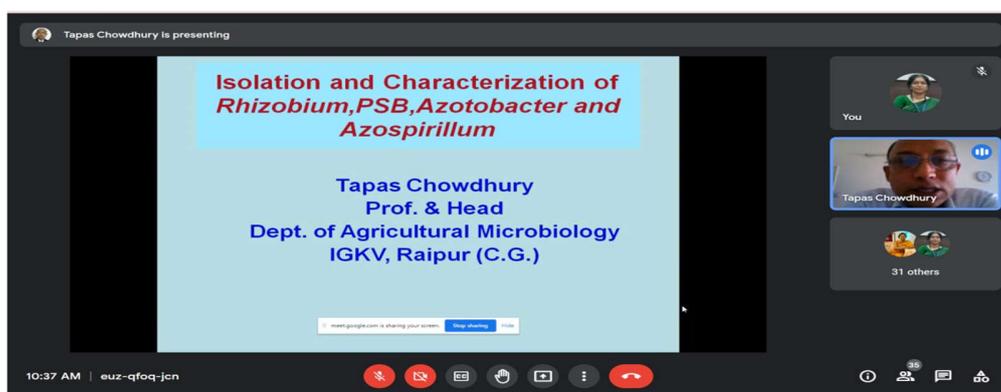
34. Prof. Rupinder Diwan, Department of Botany, Government NPG College of Science, Raipur, coordinated the session on Project Presentation by the participants. The participants were divided into teams for research project presentation at the start of the Refresher Course. The presentations were on diverse and interesting topics. Prof. Diwan evaluated the project presentation and gave valuable inputs and suggestions to the participants.



Day 11

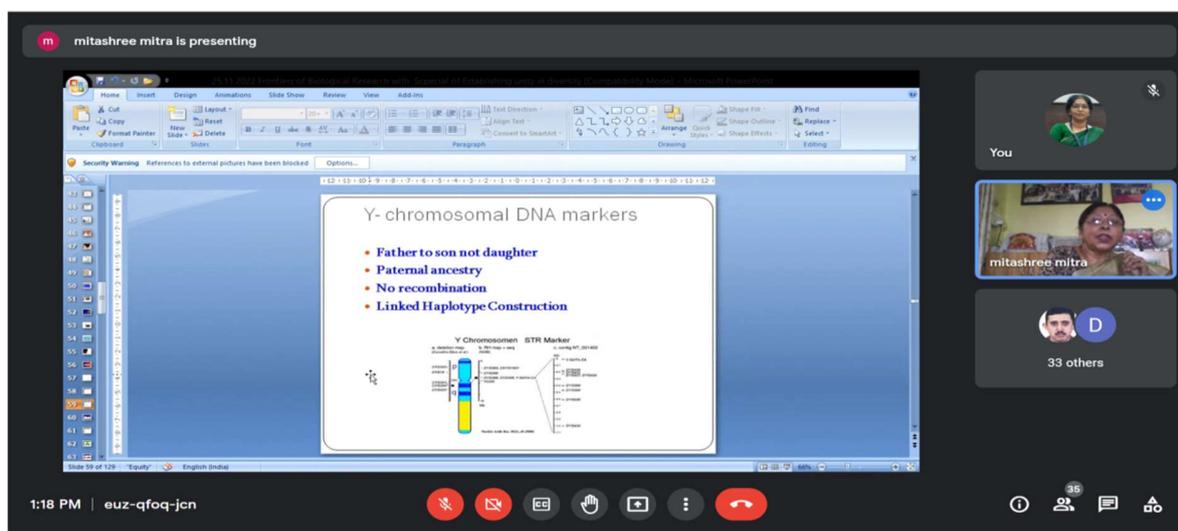
Session I (10.30-12.00)

35. Prof. Tapas Chowdhury, Head, Department of Agricultural Microbiology, Indira Gandhi Krishi Vishwavidyalaya, Raipur delivered his talk on “Isolation Technique and Characterization of Rhizobium, PSB, Azotobacter & Azospirillum”. Prof. Chowdhury focused on the isolation of rhizobium bacteria from root nodules of leguminous plants. It starts with surface sterilization of root nodule followed by serial dilution and inoculation in the YEMA agar. After this, the culture is incubated for 3-5 days. After incubation, it is characterized using biochemical testing (Gram staining, indole production, MRVP, citrate production, catalase, gelatin liquification, urease production, TSIA, starch hydrolysis) and nitrogen-fixing capacity in greenhouse cultivation. He also discussed phosphate solubilizing bacteria, whose isolation is done using Piknovskaya’s Broth, followed by its filtration, and the spectrophotometric analysis for growth. This culture is further inoculated in Piknovskaya’s medium at a ratio of 0.5 ml per plate.



Session II (12.15-13.45)

36. Resource person for the second session of the day, Prof. Mitashree Mitra, Pandit Ravishankar Shukla University, Raipur delivered her talk on “Frontiers of biological research with special references to establishing individual identity and unity in diversity”. Prof. Mitra described the uniqueness of each individual and the social organization of Indian population. During her talk, she classified the wide variety of Indian people into four broad categories: biological, morphological, cultural, and economic. Aspects of linguistic diversity, including the Indo-Aryan, Dravidian, Tibeto-Burman, and Austra-Asian language families, were also covered. The concepts of heredity, mutation, polymorphism, genomic diversity, and conventional genetic markers and fingerprinting were also dealt. She also elaborated on the frontiers of biological research, with particular reference to the establishment of individual identity and unity in diversity.



Session III (14.15-15.45)



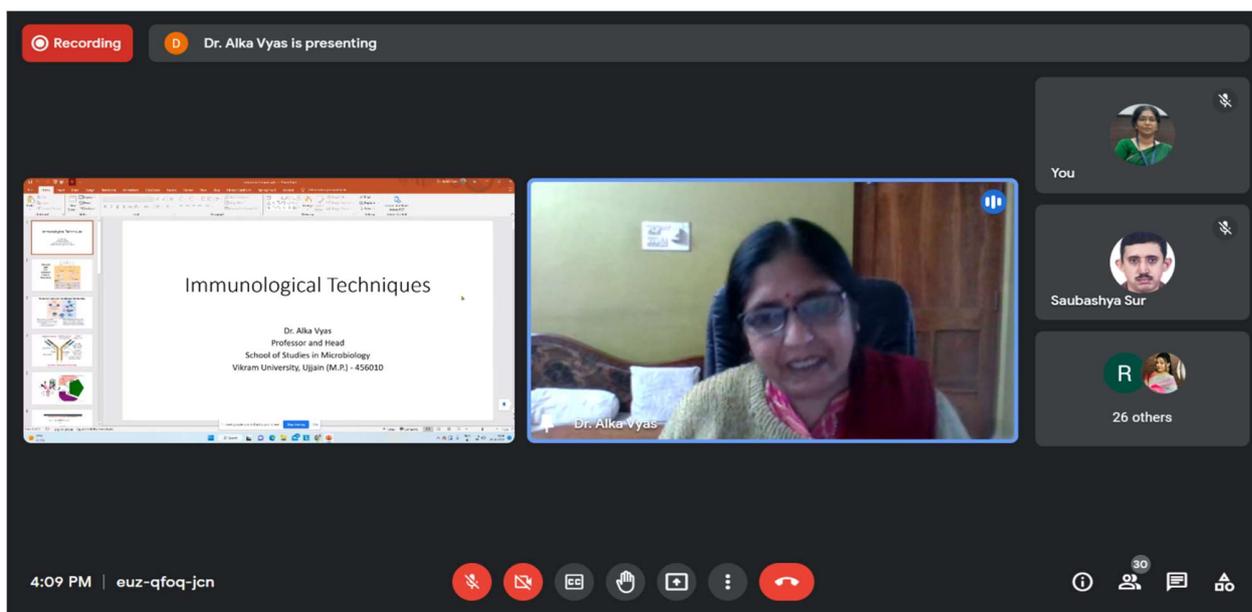
37. The session was conducted by Dr. Amit Dubey, Scientist, Chhattisgarh Council of Science and Technology, Raipur, Chhattisgarh, India on ‘Intellectual Property Right and Ethno-Pharmacology / Ethno-Botany and Mass bioprospecting’. Participants learned about the TBGRI Kani model, the recognized intellectual property of the Kani tribe, the case of Hoodia and the IPR center from the San people, and the meaning, features, and rights of intellectual property (IPR) from his nice presentation. Institutional and individual guidance on filing a patent application. Dr. Dubey finished the third session by talking about the resources and funding opportunities available through the Chhattisgarh Council of Science and Technology in Raipur, India.



Session IV (16.00-17.30)



38. The last session of the day was conducted by Prof. Alka Vyas, Head of the School of Studies in Microbiology, Vikram University, Ujjain, Madhya Pradesh. She gave an insightful lecture on "Immunological Techniques" and discussed these techniques which are based on antigen-antibody reactions. Dr. Vyas elaborated on the humoral and cell-mediated immunity, antibody and antigen structures, protein identification for any pathogens, immunoassays, complement fixation tests, hybridoma technology, and other topics. The innovative applications for immunological techniques that have risen to prominence in clinical and biotechnological research were also discussed by Dr. Vyas.



Day 12

Session I (10.30-12.00)

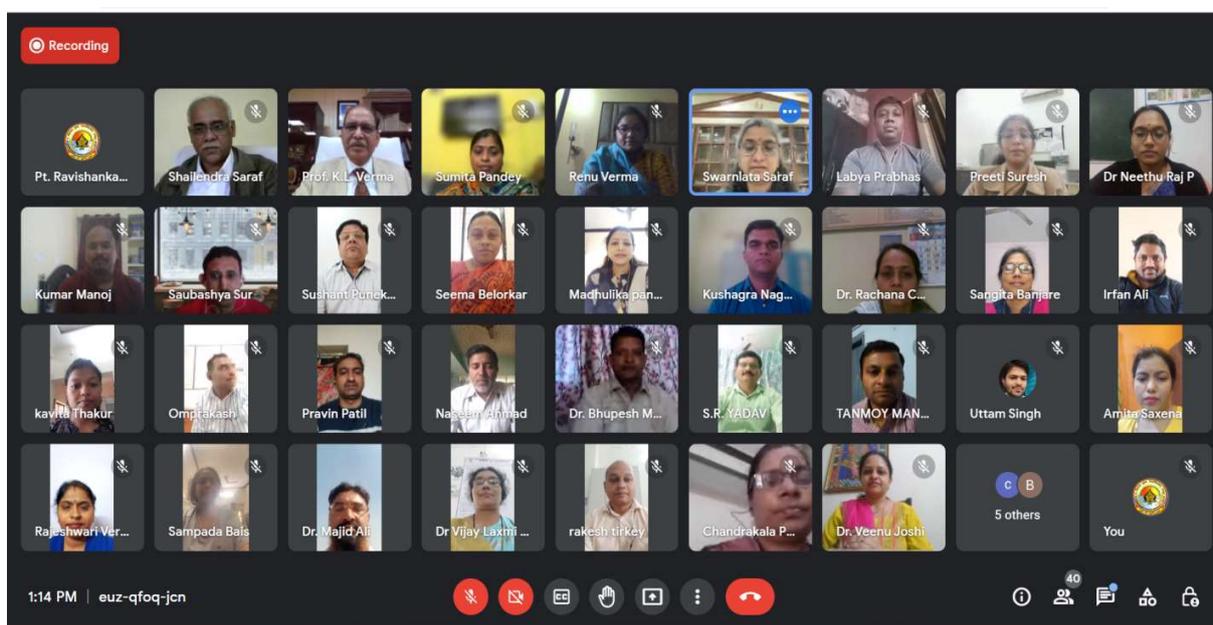


39. The resource person for the first session on the last day of the Refresher Course was Dr. Renu Bhatt, Head, Department of Biotechnology, Guru Ghasidas Vishwavidyalaya, Bilaspur and she delivered a talk on “Cell Culture Techniques – Concepts and Applications”. Dr. Bhatt began her lecture with a simple and engaging introduction to cell culture and cell lines, the various equipment required for cell culture, and the human genome project. She described the various growth factors present in culture media for the growth and survival of cultured cells. She pointed that 6% CO₂ concentration maintained by a CO₂ incubator and optimal pH is necessary for growth of cells in culture media. Dr. Bhatt provided information on how to distinguish between finite and continuous cell lines. She also gave a brief explanation of the principles underlying fluorescence microscopy, the green fluorescence proteins, and the in-depth images produced by this technique. She also provided a succinct explanation of the confocal microscope's principles of operation and how it creates 3D images. She further discussed the principles underlying the operation of flow cytometry, mentioning that it requires 10,000 cells and is very beneficial in leukemia and other research endeavors. Other topics of concern in her lecture included hybridoma technology, the concept and principles of the LOMET assay, TUNNEL assay, microarrays, retroviruses and viral oncogenes. She demonstrated the structure and operations of RTPCR and explained its importance in the COVID pandemic. She then briefly discussed the importance of in vitro fertilization before giving the example of how Dolly sheep were produced using this technique. The role of growth factors, the regulation of cell cycle and cell development by tumour suppressor genes, and how genetic changes in these genes result in cancer were all covered by her. According to Dr. Bhatt, who also distinguished between the three main cancers, carcinoma, sarcoma, leukemia, and lymphoma, the P53 gene inhibits apoptosis, DNA repair, and the cell cycle.

The screenshot shows a Zoom meeting interface. At the top, it says "RENU BHATT is presenting". The main window displays a presentation slide titled "MTT Assay Principle". The slide contains chemical structures for MTT (3-(4,5-dimethylthiazol-2-yl)-5-(3,4-dimethylthiazol-2-yl)tetrazolium salt) and its reduction to formazan by mitochondria. A diagram illustrates the mechanism: in healthy cells, the tetrazolium ring is reduced to formazan, which is released from the mitochondria. In cells with damaged or leaky membranes, the formazan is released from the mitochondria. The slide also includes a note: "Change of the tetrazolium ring to succinate dehydrogenase within the mitochondrial formazan product accumulates in healthy cells and it is released from cells with damaged or leaky membrane." The video feed shows Dr. Renu Bhatt speaking. Other participants visible include "You", "Kumar Manoj", and "33 others". The bottom of the screen shows the Zoom control bar with icons for mute, video, chat, and other functions. The time is 11:37 AM and the user ID is euz-qfoq-jcn.

Session II (12.00-13.45) - **Valedictory**

The two-week Refresher Course culminated with the valedictory function. This session was graced by Prof. Keshari Lal Verma, Hon'ble Vice-Chancellor of Pt. Ravishankar Shukla University, Raipur as the Chief Guest, Prof. Shailendra Saraf, Director-HRDC as the Chairperson, Prof. Swarnlata Saraf, Director, University Institute of Pharmacy and Prof. Preeti K. Suresh, Pt. Ravishankar Shukla University, Raipur as the Course Coordinators. Prof. Preeti K. Suresh presented a brief report of the multidisciplinary refresher course on Biological Sciences. Following that, the participants were given the opportunity to give their feedback, and they shared their experiences, and opined that the sessions were very informative, rich in content and engaging, and the invited experts as resource persons were highly articulate during their deliberations. Prof. Swarnlata Saraf, addressed the virtual gathering and stressed upon the role of teachers in the nation building on a sustainable basis and the need to augment their skills regularly. Prof. Shailendra Saraf, Director-HRDC, PRSU in his valedictory address expressed that the acquired knowledge and skills of the participating faculty members will be percolated to the student community and benefit their parent institutions as well. Hon'ble Vice-Chancellor, Prof. Keshari Lal Verma blessed all participants with his valuable words and congratulated all on successfully completing the online refresher course. The program concluded with the vote of thanks by Dr. Arvind Agrawal in which he extended gratitude to the esteemed guests, distinguished speakers, faculty members and teacher participants for their active participation.



Recording

Prof. K.L. Verma

Shailendra Saraf Swarnlata Saraf Dr Neethu Raj P

Naseem Ahmad Kumar Manoj Saubashya Sur

Labya Prabhas 31 others You

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Recording

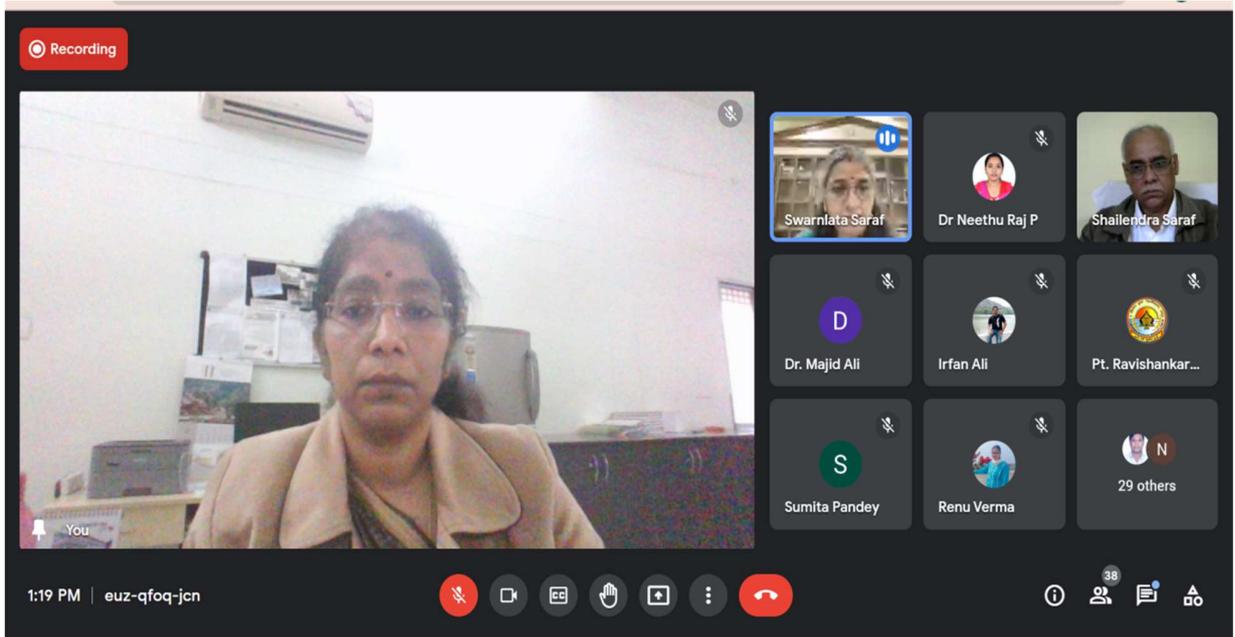
Shailendra Saraf

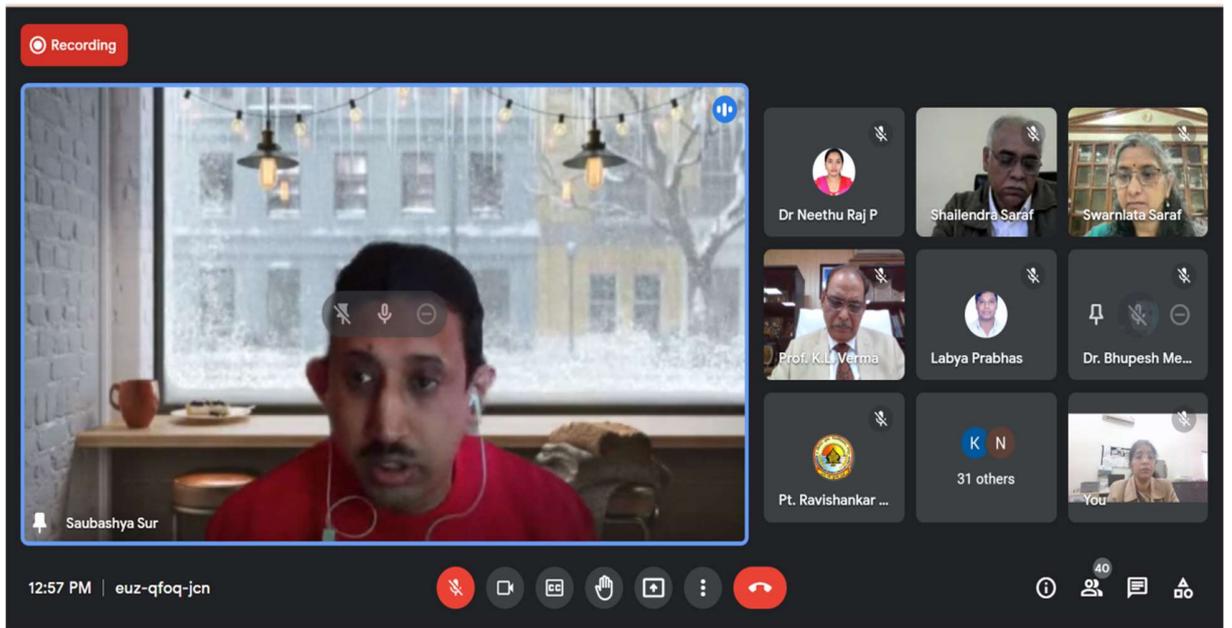
Dr Neethu Raj P Swarnlata Saraf Dr. Majid Ali

Irfan Ali Pt. Ravishankar ... Sumita Pandey

Renu Verma 30 others You

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UGC - HRDC, PRSU, Raipur

Time Table: Refresher Course in Biological Sciences

(14/11/2022 to 26/11/2022)

Inter/Multidisciplinary Refresher Course in Biological Sciences (14-26 November, 2022) UGC-Human Resource Development Centre Pt. Ravishankar Shukla University, Raipur 492 010, Chhattisgarh							
Day/ Date	Session -I (10:30 to 12:00)		Session -II (12:15 to 13:45)		Session -III (14:15 to 15:45)	Session -IV (16:00 to 17:30)	
Day 01 (14.11.22)	Registration Inauguration Induction	Tea Break	Lecture-1 Chronic Obstructive Pulmonary Disease (COPD) in Chhattisgarh: Analysis using advance biological tools Prof. Mitashree Mitra Pt. Ravishankar Shukla University, Raipur (C.G.)	Lunch Break	Lecture-2 Microbial diversity and its significance Prof. Naveen G. Kango Head, Dept. of Microbiology, Director-Academic Affairs Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.)	Lecture-3 Genome editing using CRISPR technology Prof. Satish B. Verulkar, Head, Dept of Plant Molecular Biology & Biotechnology, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.)	
Day 02 (15.11.22)	Lecture-4 Nutraceuticals and immunomodulatory herbal medicines Dr. Ashwini K. Dixit Associate Professor Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur		Lecture-5 Haploids in Crop Improvement: Concept & Applications Prof. Zenu Jha Department of Plant Molecular Biology and Biotechnology Indira Gandhi Krishi Vishwavidyalaya Raipur		Lecture-6 Protein structure determination by x-ray crystallography Dr. Dileep Vasudevan, Scientist-E & Group Leader, DBT - Institute of Life Sciences, Bhubaneswar (Orissa)	Tea Break	Micro Teaching (1-9) Prof. K.K. Sahu Head, SoS in Biotechnology Pt. Ravishankar Shukla University, Raipur (CG)
Day 03 (16.11.22)	Lecture-7 Body pattern formation Prof. Jagat Roy Professor & Head Department of Zoology, Banaras Hindu University, Varanasi - 221005, UP		Lecture-8 Thyroid abnormalities Prof. Anand Kar Professor and Head School of Life Sciences, Devi Ahilya Vishwavidyalaya, Indore (MP)		Lecture-9 Cryo-Electron Microscopy and Integrative Structural Biology Dr. Dileep Vasudevan, Scientist-E & Group Leader, DBT - Institute of Life Sciences, Bhubaneswar (Orissa)	Lunch Break	Micro Teaching (10-18) Prof. K.K. Sahu Professor and Head SoS in Biotechnology Pt. Ravishankar Shukla University, Raipur (CG)
Day 04 (17.11.22)	Lecture-10 Cell Division and Cancer: special reference to Human Papilloma Virus induced cervix cancer Prof. Jagat Roy Head, Department of Zoology, Banaras Hindu University, Varanasi, UP		Lecture-11 The subcellular targets as molecular determinants for the improved delivery of anti-cancer-drugs Prof. Vandana Soni Head, Dept. of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.)		Micro Teaching (19-27) Prof. Sanjay J. Daharwal University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur (CG)	Lunch Break	Micro Teaching (28-35) Prof. Sanjay J. Daharwal University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur (CG)

Day 05 (18.11.22)	<p>Lecture-12 Academic tools for writing and publishing in science</p> <p>Prof. Shubhini Saraf Dean, Department of Pharmaceutical Sciences Babasaheb Bhimrao Ambedkar University, Lucknow</p>		<p>Lecture-13 Yogasnas: A tool coordinating seven chakra, endocrine gland and regulating physiological homeostasis</p> <p>Dr. Seema Rai Associate Professor Department of Zoology, Guru Ghasidas Vishwavidyalaya, Bilaspur</p>		<p>Seminar (1-9)</p> <p>Prof. Kavita Thakur Head, SoS in Electronics Pt. Ravishankar Shukla University, Raipur (CG)</p>		<p>Seminar (10-18)</p> <p>Prof. Kavita Thakur Head, SoS in Electronics Pt. Ravishankar Shukla University, Raipur (CG)</p>
Day 06 (19.11.22)	<p>Lecture-14 Hypertension and its prevention</p> <p>Prof. Anand Kar Head School of Life Sciences, Devi Ahilya Vishwavidyalaya, Indore (MP)</p>		<p>Lecture-15 From sequence to structure: A story of protein structure modeling</p> <p>Dr. Anshuman Dixit Scientist-E DBT - Institute of Life Sciences, Bhubaneswar (Orissa)</p>		<p>Seminar (19-26)</p> <p>Prof. S. K. Jadhav SoS in Biotechnology Pt. Ravishankar Shukla University, Raipur (CG)</p>		<p>Seminar (27-34)</p> <p>Prof. S. K. Jadhav SoS in Biotechnology Pt. Ravishankar Shukla University, Raipur (CG)</p>
Day/ Date	Session -I (10:30 to 12:00)		Session -II (12:15 to 13:45)		Session -III (14:15 to 15:45)		Session -IV (16:00 to 17:30)
Day 07 (21.11.22)	<p>Lecture-16 Artificial neural networks and its applications</p> <p>Prof. Kavita Thakur Head, SoS in Electronics Pt. Ravishankar Shukla University, Raipur (CG)</p>	Tea Break	<p>Lecture-17 Potentials of metabolomics and ethnopharmacology in development of phytomedicinal products</p> <p>Prof. Umesh Patil Dept. of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.)</p>	Lunch Break Lunch Break	<p>Lecture-18 Generation of health promoting prebiotic oligosaccharides using microbial enzymes</p> <p>Prof. Naveen G. Kango Head, Dept. of Microbiology, Director-Academic Affairs Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.)</p>	Tea Break	<p>Lecture-19 Biopolymeric nanoparticles in treatment of Colon Cancer: In vitro and In vivo Assessments</p> <p>Dr. Sushama Talegaonkar School of Pharm. Sciences Delhi Pharmaceutical Science and Research University, Pushp Vihar, New Delhi-17</p>
Day 08 (22.11.22)	<p>Lecture-20 Role of biofertilizers for sustainability in agriculture</p> <p>Prof. Tapas Choudhary Head, Dept. of Agri Microbiology Indira Gandhi Krishi Vishwavidyalaya, Raipur</p>		<p>Lecture-21 Use of flow cytometry in biology</p> <p>Dr. Rohit Seth Department of Zoology, Guru Ghasidas University Bilaspur - 495009</p>		<p>Lecture-22 Methods of biofilm detection</p> <p>Dr. Pratima Gupta Associate Professor Dept. of Biotechnology National Institute of Technology, Raipur</p>		<p>Lecture-23 Circadian clock, cancer and chemotherapy</p> <p>Prof. Arti Parganiha SoS in Life Sciences Pt. Ravishankar Shukla University, Raipur (CG)</p>

Day 09 (23.11.22)	<p>Lecture-24 Modern biological tools: Dermal testing Dr. Mahendra S. Asawat Principal and Director Laureate Institute of Pharmacy Kathog, Himachal Pradesh</p>	<p>Lecture-25 Chronopatterns of Exercise Performance Prof. Meenakshi Sinha Department of Physiology, All India Institute of Medical Science, Raipur</p>	<p>Project (Group 1-4) Prof. Aditi Poddar SoS in Life Sciences Pt. Ravishankar Shukla University, Raipur (CG)</p>	<p>Project (Group 5-7) Prof. Aditi Poddar SoS in Life Sciences Pt. Ravishankar Shukla University, Raipur (CG)</p>
Day 10 (24.11.22)	<p>Lecture-26 Chromatin as the Regulator of Gene Expression Prof. Madan Mohan Chaturvedi Department of Zoology, University of Delhi (North Campus), Delhi</p>	<p>Lecture-27 Methods for Mapping Chromatin Domains Prof. Madan Mohan Chaturvedi Department of Zoology, University of Delhi (North Campus), Delhi</p>	<p>Lecture-28 Drug design and discovery: A primer Dr. Anshuman Dixit Scientist-E DBT - Institute of Life Sciences, Bhubaneswar (Orissa)</p>	<p>Project (Group 8-11) Prof. Rupinder Diwan Department of Botany Govt. NPG College of Science Raipur (CG)</p>
Day 11 (25.11.22)	<p>Lecture-29 Isolation techniques and characterization of Rhizobium Prof. Tapas Choudhary Head, Dept. of Agri Microbiology Indira Gandhi Krishi Vishwavidyalaya, Raipur</p>	<p>Lecture-30 Frontiers of biological research with special reference to establishing individual identity and unity in diversity Prof. Mitashree Mitra Pt. Ravishankar Shukla University, Raipur, Chhattisgarh</p>	<p>Lecture-31 Intellectual property rights and ethnopharmacology/ ethnobotany and mass bioprospecting Dr. Amit Dubey Scientist Chhattisgarh Council of Science and Technology, Raipur, Chhattisgarh</p>	<p>Lecture-32 Immunological techniques Prof. Alka Vyas Head, School of Studies in Microbiology Vikram University Ujjain, Madhya Pradesh</p>
Day 12 (26.11.22)	<p>Lecture-33 Cell culture techniques- concepts and applications Dr. Renu Bhatt Head, Department of Biotechnology Guru Ghasidas Vishwavidyalaya Bilaspur, Chhattisgarh</p>	<p>VALEDICTORY</p>		

REFRESHER COURSE – BIOLOGICAL SCIENCE

(14.11.2022 TO 26.11.2022)

COURSE COORDINATOR - PROF. SWARNLATA SARAF/PROF. PREETI K. SURESH

PARTICIPANTS LIST

Sr. No.	Name of Participants	Email	Mobile No.	Designation	Subject	College	University	Photo
01.	Madhulika Pandaw	madhulikapandaw@gmail.com	9926558217	Assistant Professor	Botany	Bhakta Mata Karma Govt. College Samoda, Raipur, CG	Pt. Ravishankar Shukla University, Raipur, CG	
02.	Dr.(smt) Vijay Laxmi Naidu	tusharajen1@gmail.com	7587063367	Assistant Professor	Botany	Govt. V.Y.T. P.G. Autonomous College, Durg, CG	Hemchand Yadav University, Durg, CG	
03.	Dr. Rachana Choudhary	rachanadin@gmail.com	9770577935	Assistant Professor	Microbiology	Shri Shankaracharya Mahavidyalaya, Junwani, Bhilai, CG	Hemchand Yadav University, Durg, CG	
04.	Dr. Sonia Bajaj	soniabajaj51@gmail.com	9907414243	Assistant Professor	Zoology	Shri Shankaracharya Mahavidyalaya, Junwani, Bhilai, CG	Hemchand Yadav University, Durg, CG	
05.	Tanmoy Mandal	tanmoymandal22@gmail.com	9474533476	Assistant Professor	Plant Protection	Suri Vidyasagar College, Birbhum, West Bengal	The University Of Burdwan, Bardhaman, West Bengal	
06.	Kavita Thakur	kavitaasahare@gmail.com	7389009474	Assistant Professor	Zoology	Govt. Naveen College, Bori, Dist-Durg, CG	Hemchand Yadav University, Durg, CG	
07.	Irfan Ali	irfanbhu21@gmail.com	9616112408	Assistant Professor	Zoology	Pt. Devi Prasad Choubey Govt. College, Saja, Dist-Bemetara, CG	Hemchand Yadav University, Durg, CG	
08.	Dr. Neethu Raj Panickar	neethurajpstc@gmail.com	8921131938	Assistant Professor	Zoology	St. Thomas College, New Ruabanda, Bhilai, Durg, CG	Hemchand Yadav University, Durg, CG	
09.	Dr.Naseem Ahmad Mansoori	naseemahmad3906@gmail.com	9691481669	Assistant Professor	Zoology	Govt. Maharshi Valmiki P.G. College Bhanuptapur, Dist-Kanker, CG	Shaheed Mahendra Karma University Jagdalpur, Dist-Bastar, CG	
10.	Smt. Rajeshwari Verma	verma8raj@gmail.com	9300331192	Assistant Professor	Zoology	Mohan Lal Jain (Mohan Bhaiya) Govt. College Khursipar, Bhilai, Durg, CG	Hemchand Yadav University, Durg, CG	
11.	Dr Pravin Dinkar Patil	pravin.patil99@gmail.com	7057972705	Assistant Professor	Botany	Shankarlal Agrawal Science College, Salekasa, Dist-Gondia, Maharashtra	Rastrasankar Tukdoji Maharaj Nagpur University, Nagpur, Maharashtra	

12.	Dr. Chandni Afsana	chandniafsana7@gmail.com	8839542441	Assistant Professor	Botany	Gurukul Art's, Commerce and Science College, Pathalgaon, Dist-Jashpur, CG	Sant Gahira Guru University, Sarguja, Ambikapur, CG	
13.	Dr. Bhupeshkumar Keshorao Mendhe	mendhebk@gmail.com	9960420164	Assistant Professor	Botany	Shankarlal Agrawal Science College, Salekasa, Dist-Gondia, Maharashtra	Rastrasant Tukdoji Maharaj Nagpur University, Nagpur, Maharashtra	
14.	Renu Verma	vrenu0492@gmail.com	9753670492	Assistant Professor	Zoology	Dr. K.C.B. Govt. P.G. College, Bhilai-3, Durg, CG	Hemchand Yadav University, Durg, CG	
15.	Dr. Seema Anil Belorkar	seema.belorkar@gmail.com	8319886197	Assistant Professor	Microbiology	Atal Bihari Vajpayee University, Bilaspur, CG		
16.	Uttam Singh	uttamsinghzooology@gmail.com	9200190987	Assistant Professor	Zoology	Govt. Degree College, Jaisinghnagar, Shahdol, MP	Awadhes Prataap Singh University, Rewa, MP	
17.	Dr. Saubashya Sur	saubashya@gmail.com	9903997351	Assistant Professor	Botany	Ramananda College, Bishnupur, West Bengal	Bankura University, Bankura, West Bengal	
18.	Mr. Labya Prabhas	labya_127@yahoo.co.in	8319398338	Assistant Professor	Bioscience	School of Studies in Life Science	Pt. Ravishankar Shukla University, Raipur, CG	
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27.	Smt. Chandrakala Patel	chandrakalapatelap@gmail.com	9425891199	Assistant Professor	Zoology	Shahid Rajeev Pandey Govt. College Bhatagaon, CG	Pt. Ravishankar Shukla University, Raipur, CG	
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30.	Dr. Veenu Joshi	vinu.jsh@gmail.com	91-9424041236	Assistant Professor	Botany	Centre for Basic Sciences	Pt. Ravishankar Shukla University, Raipur, CG	
31.	Kushagra Nagori	kushagrana gori13@gmail.com	969150085 0	Associate Professor	Pharmacy	Rungta College of Pharmaceutical Sciences and Research, Bhilai, CG	Chhattisgarh Swami Vivekanand Technical University, Bhilai, CG	
32.	Adeep Kujur	adeepkujur uiop@gmail.com	810359955 8	Assistant Professor	Pharmacy	University Institute of Pharmacy	Pt. Ravishankar Shukla University, Raipur, CG	
33.	Rakesh Tirkey	rakeshtirkey99@gmail.com	860212916 2	Assistant Professor	Pharmacy	University Institute of Pharmacy	Pt. Ravishankar Shukla University, Raipur, CG	

REFRESHER COURSE – BIOLOGICAL SCIENCE

(14.11.2022 TO 26.11.2022)

COURSE COORDINATOR - PROF. SWARNLATA SARAF/PROF. PREETI K. SURESH

CHAIRPERSON AND REPORTER LIST

Date	Chairperson	Reporter	Chairperson	Reporter
	1 st Half		2 nd Half	
14.11.2022	Madhulika Pandaw	Dr.(smt) Vijay Laxmi Naidu	Hivraj Isru Raut	Jitendra Yadav
15.11.2022	Dr. RachanaChoudhary	Dr. Sonia Bajaj	Tanmoy Mandal	Kavita Thakur
16.11.2022	Irfan Ali	Dr. Neethu RajPanickar	Dr.Naseem Ahmad Mansoori	Smt. Rajeshwari Verma
17.11.2022	Dr Pravin Dinkar Patil	Dr. Chandni Afsana	Dr. Bhupeshkumar Keshorao Mendhe	Dr. Sandhya Tambekar Wanjari
18.11.2022	Renu Verma	Dr. Seema AnilBelorkar	Uttam Singh	Dr. Saubashya Sur
19.11.2022	Mr. Labya Prabhas	Omprakash Meravi	Dr. Kumar Manoj	Shobha Ram Yadav
20.11.2022	Sunday			
21.11.2022	Sangita Banjare	Amita saxena	Dr. Majid Ali	Mrs. Sumita Pandey
22.11.2022	Dr. SushantPunekar	Smt. Chandrakala Patel	Sampada kashyap	Rekha Kashyap
23.11.2022	Dr. Veenu Joshi	Kushagra Nagori	Adeep Kujur	Rakesh Tirky
24.11.2022	Dr.(smt) Vijay Laxmi Naidu	Madhulika Pandaw	Jitendra Yadav	Hivraj Isru Raut
25.11.2022	Dr. Sonia Bajaj	Dr. RachanaChoudhary	Kavita Thakur	Tanmoy Mandal
26.11.2022	Dr. Neethu Raj Panickar	Irfan Ali	Smt. RajeshwariVerma	Dr.Naseem Ahmad Mansoori

Human Resource Development Centre

**Pt. Ravishankar Shukla
University, Raipur-492 010
(Chhattisgarh)**

REFRESHER COURSE (Inter/Multidisciplinary) in Biological Science (14.11.2022 to 26.11.2022)

Patron
Prof. Keshari Lal Verma
Vice-Chancellor, PRSU

Director (HRDC)
Prof. Shailendra Saraf

Course Coordinators
Prof. Swarnlata Saraf and Prof. Preeti K Suresh

The UGC-HRDC, PRSU, Raipur, Chhattisgarh is organizing an Online inter/multidisciplinary Refresher Course in Biological Science during **November 14-26, 2022** between **10:30 to 17:30** for college and university teachers.

Theme: Modern tools and techniques in biology – concepts, and applications

Objective: The objective of this Refresher Course is to provide participants with opportunities and resources for their professional and personal enrichment. The course will focus on modern tools and techniques in biology and the allied fields. The course will provide insight into the latest advances in the area and further widen the understanding of the participants with the various aspects of the theme. This course would be useful for teachers of various disciplines irrespective of their specialization. Eminent resource persons from academia, research, and industry will be invited for sharing their expertise and knowledge in the field. The participants will not only be exposed to the recent developments in the area but will also have a forum to initiate fruitful and collaborative relationships with fellow participants and scholarly resource persons.

Salient Features of the Course: The course will have two parts: 45 h of thematic lectures by resource persons, and 27 h of other activities, like Microteaching, Project Work, Seminars, and Demonstration of advanced equipment facility. The above activities will highlight creative and innovative practices in teaching and research. There will be assessment exercises and activities as part of the progression of the course. Moreover, an MCQ-based examination at the end of the course will also be conducted. All the participants who will complete the refresher course successfully will get certificates with gradation.

Target Group: Include all regular faculties of different disciplines of Biochemistry, Biotechnology, Botany, Life Science, Microbiology, Pharmacy and Zoology in the Universities/ Colleges that are included under section 2 (f) of the UGC act. The teachers of the colleges affiliated to the University for at least five years can also participate.

Mode of Delivery: Live web session, Discussion and Assignment on Google Meet/ Classroom.

Requirement for the Course: Desktop/ Laptop/ Smart phone with good Internet Connectivity (Webcam, Microphone, headphones and Multimedia enabled).

Email: rchrdeprsu@gmail.com; dr.arvind02@gmail.com

Call: 0771-2263828; 9754233057

Registration/ Application Link: <https://forms.gle/o6Wf9nALP6A4h2fc9>

Registration fee: Rs. 1000.00 (non-refundable), to be paid online in Director, ASC bank account number - 30644576182; IFSC code: SBIN0003739, State Bank of India, PRSU, Raipur.

Number of Participants: Minimum 20 and Maximum 40 on first come first serve basis.

MARKS AND GRADING PATTERN

Assessment Criterion and Marking:

Multiple-choice objective tests:	30
Seminars / participant presentation:	15
Project / survey / others:	20
Micro-teaching / participation:	10
Holistic response:	25
Total:	100

Grading pattern (based on Marks)

A+ :	85 percent and above
A :	70 percent to less than or equal to 84 percent
B :	60 percent to less than or equal to 69 percent
C :	50 percent to less than or equal to 59 percent
F :	Below 49 percent

Those teacher participants who score F grade are required to repeat the program after a gap of one year without financial commitment to UGC-HRDC.

Online Delivery Platform: GOOGLE MEET