



# ST. XAVIER'S COLLEGE MAHUADANR

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Website: [www.sxcm.co.in](http://www.sxcm.co.in)

## **Report on**

# **The Five Days International Webinar**

**from**

**January 20<sup>th</sup> – 24<sup>th</sup> 2025**

**On**

**Recent Trends in Interdisciplinary  
Research and Complex Global  
Challenges**



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The International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges brings together experts and researchers to explore groundbreaking advancements across diverse fields, focusing on innovative solutions to global issues. The session on the Future of Nanotechnology delves into its transformative potential in medicine, electronics and environmental sustainability. Cybersecurity and Digital Privacy highlights the critical need for robust strategies to protect digital ecosystems, safeguard sensitive data and mitigate the rising threat of cyber-attacks in a hyperconnected world. The discussion on Climate Change and its Global Impact emphasizes the urgency of adopting multidisciplinary approaches to tackle environmental crises, mitigate disasters, and promote sustainable development. The role of Artificial Intelligence (AI) and Machine Learning (ML) is explored as pivotal in enhancing decision-making, predictive analytics and intelligent systems to address challenges in healthcare, finance, and environmental monitoring. Lastly, the session on Structure-Based Drug Design focus on leveraging computational technologies to accelerate drug discovery, enabling targeted therapies for diseases and fostering innovation in healthcare. By integrating insights from these fields, the webinar underscores the importance of collaboration and interdisciplinary approaches in addressing complex global challenges, inspiring participants to contribute to sustainable and impactful solutions.

## Day 1

Topic – Future of Nanotechnology: Opportunities and Challenges

Resource Speaker – **Dr. J. Judith Vijaya**

## Day 2

Topic – Cybersecurity and Digital Privacy

Resource Speaker – **Dr. S. Sriranjani Mokshagundam**

## Day 3

Topic- Climate Change and its Global Impact

Resource Speaker – **Dr. S. Maria Packiyam SJ**

## Day 4

Topic – Artificial Intelligence and Machine Learning

Resource Speaker – **Dr. Raj Kumar Masih**

## Day 5

Topic – Structure- Based Drug Design: Insights and Innovations

Resource Speaker – **Dr. Ramakrishna Meduri**



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## Report of Day 1 of the Five-Day International Webinar

- 1. Title of the Program:** Five Day International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges
- 2. Organizing Cell:** SXCM in collaboration with IQAC
- 3. Date:** 20.01.2025
- 4. Number of Participants:** 55
- 5. Topic of the Webinar:** Future of Nanotechnology: Opportunities and Challenges
- 6. Resource Person:** Dr. J. Judith Vijaya
- 7. Objective:**

A five-day webinar on "**Recent Trends in Interdisciplinary Research and Complex Global Challenges**" was inaugurated on **January 20, 2025**, at **St. Xavier's College, Mahuadanr**. The webinar aimed to bring together academics, researchers, and students to discuss the evolving nature of interdisciplinary research and address the complex challenges facing the global community.

The event was conducted online, ensuring wide participation from scholars and students from various institutions. It served as a platform for enriching discussions on the latest advancements in research and how different fields of study can collaborate to solve pressing global issues.

### 8. Detail Description of the Event:

The inaugural session on **Day One** focused on "**The Future of Nanotechnology: Opportunities and Challenges**." "Nanotechnology, with its ability to revolutionize various sectors, was highlighted as one of the most promising fields in science and technology. The session addressed the potential applications of nanotechnology, its evolving role in medicine, energy, and electronics, as well as the challenges and ethical concerns surrounding its development.

Asst. Prof. Surbhi Sinha – A faculty member of St. Xavier's College, Mahuadanr, who provided seamless moderation and led the session's discussion.

Asst. Prof. Shephali Prakash – Introduced Dr. J. Judith Vijaya to the audience, highlighting her academic background, research contributions, and expertise in nanotechnology.



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**Dr. J. Judith Vijaya** is a distinguished expert in Nanotechnology, with many years of experience in research and development in the field. Dr. Vijaya provided an insightful overview of nanotechnology, discussing its applications in healthcare (such as drug delivery systems and cancer treatment), electronics (nano-chips and sensors), and environmental science (nanomaterials for water purification). She also explored the **ethical implications** of nanotechnology, including concerns over safety, environmental impact, and regulation.

- **Nanotechnology's Role in Medicine:** Dr. Vijaya discussed how nanotechnology is transforming medical treatments, particularly in the development of more targeted and effective drug delivery systems.
- **Innovation in Electronics:** The potential of nano-scale materials to make electronics more efficient, smaller, and more powerful was emphasized.
- **Environmental Solutions:** Nanotechnology's ability to address environmental challenges, such as water purification and air filtration, was explored.
- **Challenges and Risks:** Ethical concerns about the long-term environmental effects and the regulation of nanotechnology were addressed. The session also highlighted the importance of interdisciplinary collaboration to develop safe and sustainable nanotech solutions.

Asst. Prof. Samir Toppo – Delivered the vote of thanks, expressing gratitude to Dr. Vijaya for her enlightening presentation, as well as to all participants for their active involvement.

## 9. Outcome:

The webinar attracted a diverse audience from various academic institutions, including students, researchers, and faculty members, all actively engaging in the discussions. The Q&A session that followed Dr. Vijaya's presentation was particularly engaging, with participants posing insightful questions about the future implications of nanotechnology and its integration with other fields like biotechnology and artificial intelligence.

The first day of the webinar was a success, with meaningful insights shared on nanotechnology's potential and challenges. It set the tone for the upcoming days, which are expected to continue exploring complex global challenges from an interdisciplinary perspective.

The next four days will focus on other key topics related to interdisciplinary research and global challenges, with expert speakers from various fields.



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## 10. Brochure:

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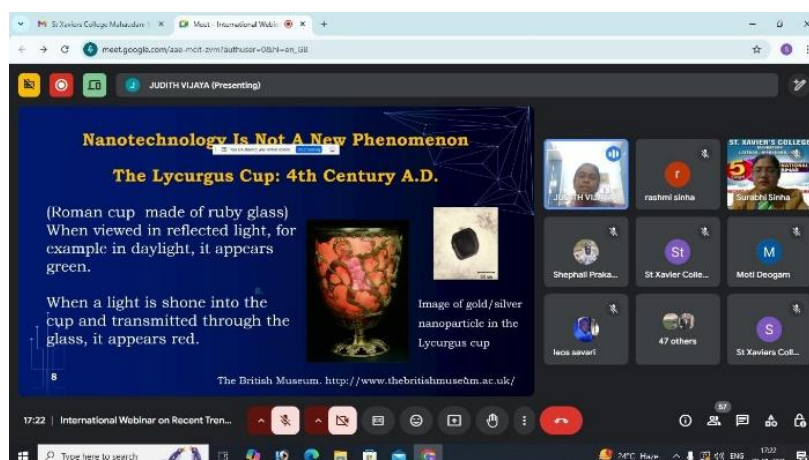
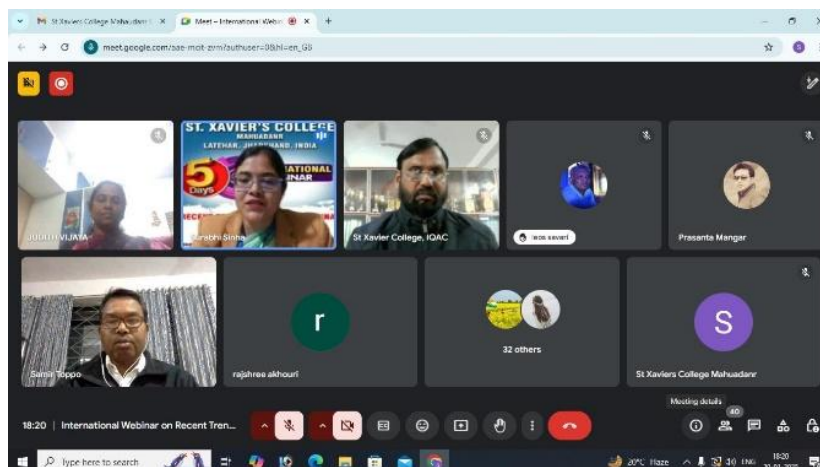
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**International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges**

**Day-1**  
Future of Nanotechnology:  
Opportunities and Challenges

**Dr. J. Judith Vijaya**  
Former Head of Science, Assistant Professor  
Department of Chemistry  
Loyola College, Chennai.

## 11. Photos:





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## Report of Day 2 of the Five-Day International Webinar

- 1. Title of the Program:** Five Day International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges
- 2. Organizing Cell:** SXCM in collaboration with IQAC
- 3. Date:** 21.01.2025
- 4. Number of Participants:** 64
- 5. Topic of the Webinar:** Cybersecurity and Digital Privacy
- 6. Resource Person:** Dr. S. Sriranjani Mokshagundam
- 7. Objective:**

The objective is to raise awareness about emerging cyber threats, promote best practices for data protection, and foster global collaboration in tackling cybersecurity challenges. This webinar aims to bring together experts, professionals, and researchers from various places to discuss the latest advancements in cybersecurity technologies, regulatory frameworks, and strategies for safeguarding digital assets. By addressing critical issues such as cybercrime, data breaches, and privacy concerns, the event will equip participants with the knowledge and tools needed to enhance online security. Additionally, it will serve as a platform for networking, knowledge sharing, and exploring innovative solutions to strengthen digital resilience worldwide.

### 8. Detailed Description of the event:

The Five-Day International Webinar series on “**Recent Trends in Interdisciplinary Research and Complex Global Challenges**” was organized by St. Xavier's College in collaboration with the IQAC of the college. The event aimed to bring together experts, faculty, academicians, professionals, and scholars from across the globe to discuss critical global challenges and the need for interdisciplinary research to address them. The second day of the webinar was an insightful session on “**Cybersecurity and Digital Privacy**”. The session focused



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on the growing significance of cybersecurity in today's digital world and the importance of safeguarding online privacy against emerging threats.

The event commenced with exceptional anchoring by Asst. Professor Shilpi Horo, whose outstanding moderation kept the audience engaged and set a professional yet interactive tone for the session. This was followed by a warm and gracious welcome address by Asst. Prof. Ronit Marcel Xess, introduced the esteemed speaker of the day, Dr. S. Sriranjani Mokshagundam. He highlighted her remarkable achievements as a Professor of Management at BGS B-School, Bangalore, and Research Supervisor at Mysore University, Karnataka, and spoke about her vast expertise and deep knowledge in the field of cybersecurity and digital privacy and also emphasized the relevance of cybersecurity in today's technology-driven era.

Following the introduction, Dr. S. Sriranjani Mokshagundam took over the session with her thought-provoking and highly informative presentation. She elaborated on crucial aspects of cybersecurity, including cyber threats, data protection strategies, cybercrime prevention, and the importance of maintaining digital hygiene. Her expertise and ability to simplify complex cybersecurity concepts made the session engaging and educational. Participants actively interacted, and she patiently addressed their queries, providing insightful solutions that left everyone satisfied and well-informed.

The session concluded with a heartfelt vote of thanks by Asst. Prof. Anshu Ankita Bara, who did commendable work in expressing gratitude to the speaker, participants, and organizing team. The second day of the webinar was a resounding success, fostering meaningful discussions on cybersecurity and digital privacy while highlighting the crucial role of interdisciplinary research in addressing global challenges.

## 9. Outcome:

The second day of the Five-Day International Webinar Series on "Cybersecurity and Digital Privacy" proved to be an enriching and impactful session. Participants gained a deeper understanding of the evolving cyber threat landscape and the



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importance of safeguarding personal and organizational data in the digital era. The session provided valuable insights into cybersecurity best practices, data privacy regulations, and proactive strategies to mitigate cyber risks.

Through interactive discussions and expert guidance, attendees became more aware of the significance of maintaining digital hygiene, recognizing cyber threats, and implementing secure online practices. The Q & A session allowed participants to address their concerns, with Dr. Sriranjani offering practical solutions to real-world cybersecurity challenges. Overall, the session empowered individuals with the knowledge to enhance their digital security and reinforced the need for interdisciplinary collaboration in tackling cybersecurity issues. The positive feedback and active engagement of attendees highlighted the session's success in raising awareness and fostering a proactive approach to digital privacy and cybersecurity.

## 10. Brochure:

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**International Webinar on Recent Trends in  
Interdisciplinary Research and Complex Global  
Challenges**

**Day-2**  
Cybersecurity  
and  
Digital Privacy

**Dr. S Sriranjani Mokshagundam**  
Professor of Management  
B.S. B. School, Bangalore Research Supervisor  
Mysore University, Karnataka



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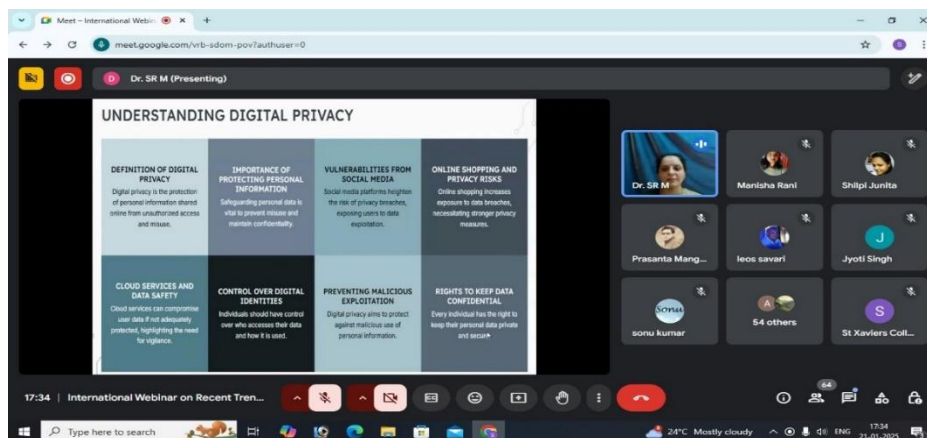
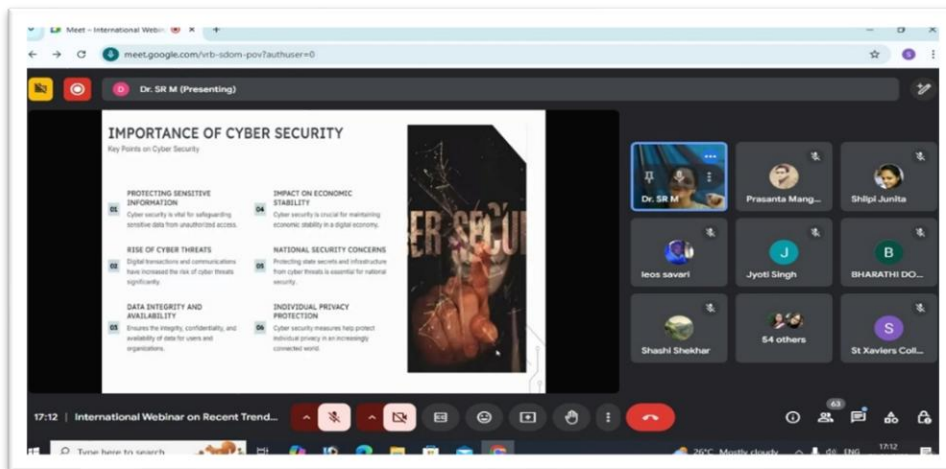
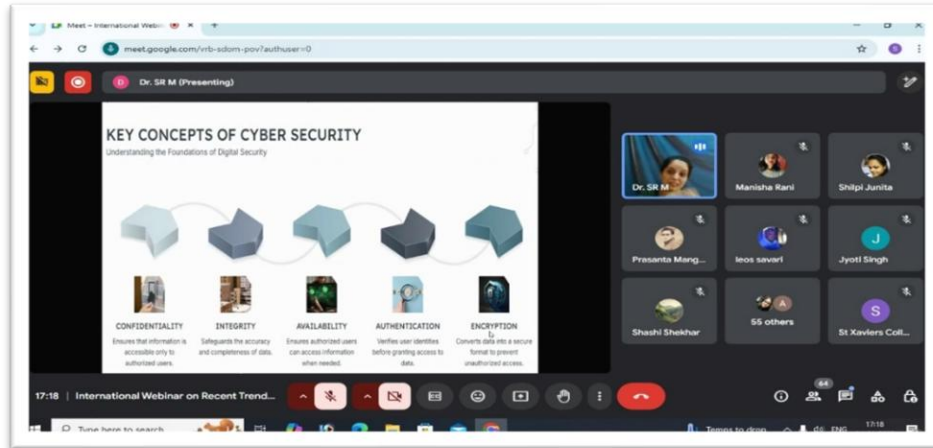
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## Report on International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges (Day 3 - Theme: Climate Change and its Global Impact)

### Report of Day 2 of the Five-Day International Webinar

- Title of the Program:** Five Day International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges
- Organizing Cell:** SXCM in collaboration with IQAC
- Date:** 22.01.2025
- Number of Participants:** 64
- Topic of the Webinar:** Climate Change and its Global Impact
- Resource Person:** Dr. Fr. Maria Packiyam SJ
- Objective:**

The primary objective of this webinar was to discuss the pressing issue of climate change and its far-reaching impact on global ecosystems, societies, and economies. The session aimed at raising awareness about the urgency of addressing climate change through interdisciplinary research and global cooperation. Furthermore, it sought to explore innovative strategies for mitigating its effects and adapting to the changing environment, in line with sustainable development goals.

#### 8. Detailed Description of the Event:

On the third day of the webinar, participants gathered virtually to engage in a comprehensive discussion on the critical topic of *Climate Change and its Global Impact*.

The session was initiated with a welcome address from Assistant Professor Moti Deogam, followed by a brief introduction to the topic. Dr. Fr. Maria Packiyam SJ, the esteemed resource person for the day, delivered an insightful lecture that began with an overview of the science behind climate change, highlighting its causes, manifestations, and projected future scenarios.

Dr. Packiyam delved into the various dimensions of climate change, emphasizing its global consequences, such as rising sea levels, extreme weather events, biodiversity loss, and the displacement of vulnerable populations. He discussed the interconnectedness of these issues with socio-economic disparities, stressing the need for inclusive and holistic solutions.

The session also focused on the role of interdisciplinary research in understanding and combating climate change. Dr. Packiyam underscored the importance of integrating fields such as environmental science, economics, sociology, and political science to develop effective



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strategies for climate action. He encouraged participants to think beyond disciplinary boundaries and explore collaborative research avenues.

Throughout the webinar, Dr. Packiyam used case studies from different regions to showcase real-world examples of climate change impacts and successful mitigation efforts. He also highlighted the role of individuals, communities, governments, and international organizations in driving the global response to climate change.

The session concluded with a Q&A segment, where participants raised thought-provoking questions on topics ranging from renewable energy solutions to policy frameworks for climate adaptation. Dr. Packiyam addressed these questions with great expertise, fostering a stimulating and interactive dialogue.

## 9. Outcome of the Program:

The Day 3 session on *Climate Change and its Global Impact* proved to be highly informative and thought-provoking. The key outcomes of the program included:

- **Enhanced Awareness:** Participants gained a deeper understanding of the science behind climate change and its far-reaching consequences for the planet.
- **Interdisciplinary Perspective:** The session successfully emphasized the importance of interdisciplinary research and collaboration in addressing complex global challenges such as climate change.
- **Practical Insights:** Participants learned about effective strategies and initiatives from various parts of the world aimed at mitigating the impact of climate change.
- **Engagement:** The interactive Q&A session fostered active participation and exchange of ideas among the attendees, encouraging them to think critically about their roles in climate action.
- **Inspiration for Action:** Dr. Packiyam's insights inspired participants to contribute to climate research and sustainability initiatives, whether in academic, professional, or personal capacities.

The webinar provided a comprehensive understanding of the global challenge of climate change and underscored the importance of collective action and research in mitigating its effects.

Finally, the session ended with a **vote of thanks** delivered by **Dr. Rajeep Kumar Tirkey**. Dr. Tirkey expressed gratitude to Dr. Packiyam for his valuable insights and for taking the time to guide the participants through such an important and timely topic. He also thanked all the participants for their active engagement and emphasized that the discussions held during the session should inspire everyone to contribute to global efforts in combating climate change. Dr. Tirkey concluded his speech by extending his appreciation to the organizing committee for making the event a success and wished everyone a productive rest of the webinar.



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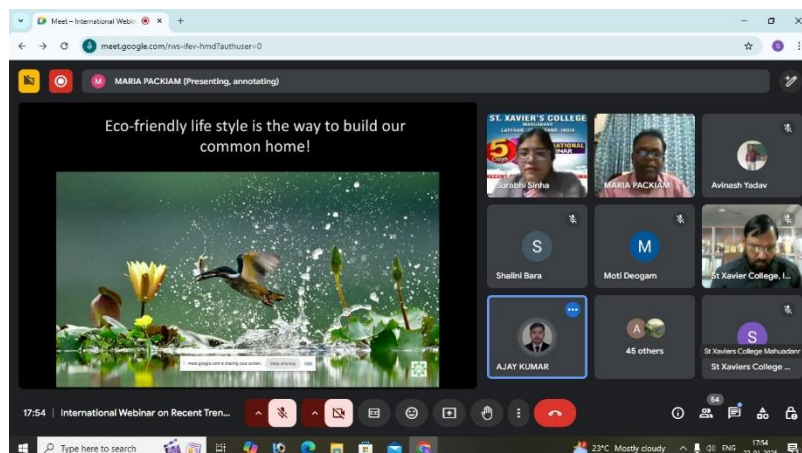
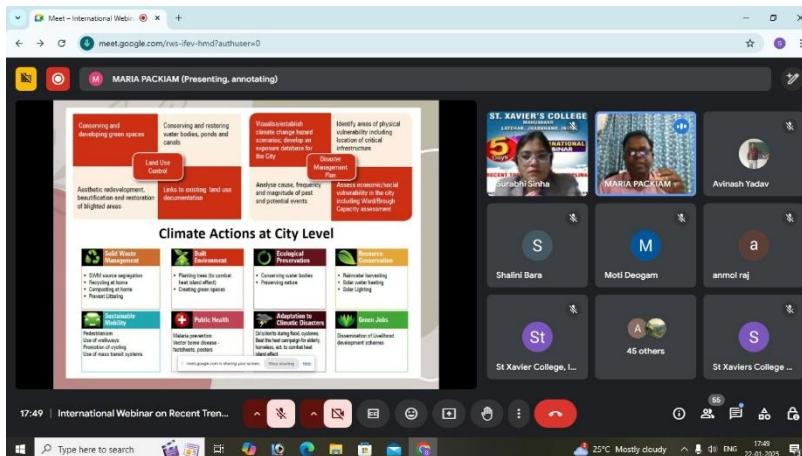
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**International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges**

**Day-3**  
Climate change and it's Global Impact

**Dr. S. Maria Packiyam SJ**  
Assistant Professor & Research Guide  
Department of Advanced Zoology & Biotechnology  
Loyola college, Chennai

## 11.Photos:





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## Report of Day 4 of the Five-Day International Webinar

- 1. Title of the Program:** Five Day International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges
- 2. Organizing Cell:** SXCM in collaboration with IQAC
- 3. Date:** 23.01.2025
- 4. Number of Participants:** 69
- 5. Topic of the Webinar:** Artificial Intelligence and Machine Learning

**6. Objective:**

The objective of the webinar was to provide participants with a comprehensive understanding of Artificial Intelligence and Machine Learning, their applications, and their impact on various industries and sectors.

**7. Detailed Description of the event:**

A five-day International Webinar on “**Recent Trends in Interdisciplinary Research and Complex Global Challenges**” was organized by St. Xavier's College in collaboration with the IQAC of the college. The fourth day of the webinar was on “Artificial Intelligence and Machine Learning”. It was indeed an enlightening, informative, engaging and impactful one for all the participants.

Dr. Raj Kumar Masih, Senior Lecturer, Govt. University of Jazaan, Saudi Arabia was the speaker. His expertise and insights into the transformative power of AI and ML was truly inspiring. He not only demystified complex concepts but also demonstrated how these technologies are shaping the future of the world. His thought-provoking examples and practical applications gave us all much to reflect on and explore further.

Asst. Professor Shashi and his team, and the technical team headed by Mr. Khurshid meticulously planned and seamlessly executed the event. Asst. Professor Mr. Subodh



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introduced the speaker the speaker of the day, Dr. Raj Kumar Masih, to the participants, and Asst. Professor Shilpi guided and coordinated the session so effectively.

The event brought together experts, faculty, academia, professionals, and research scholars from across the globe, and they all engaged themselves in the webinar with curiosity, enthusiasm and thoughtful questions and discussion.

## 8. Outcome:

- The participants gained a strong understanding of key concepts, principles, and differences between AI and ML.
- They learnt how AI/ML is transforming industries and sectors like healthcare, finance, defence and automation.
- They also had a fruitful discussion on job opportunities, required skills, and educational resources for AI/ML careers.

## 9. Brochure:

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**International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges**

**Day-4**  
Artificial Intelligence  
And  
Machine Learning

**Dr. Raj Kumar Masih**  
Senior Lecturer  
Govt. University of Jazan  
Saudi Arabia



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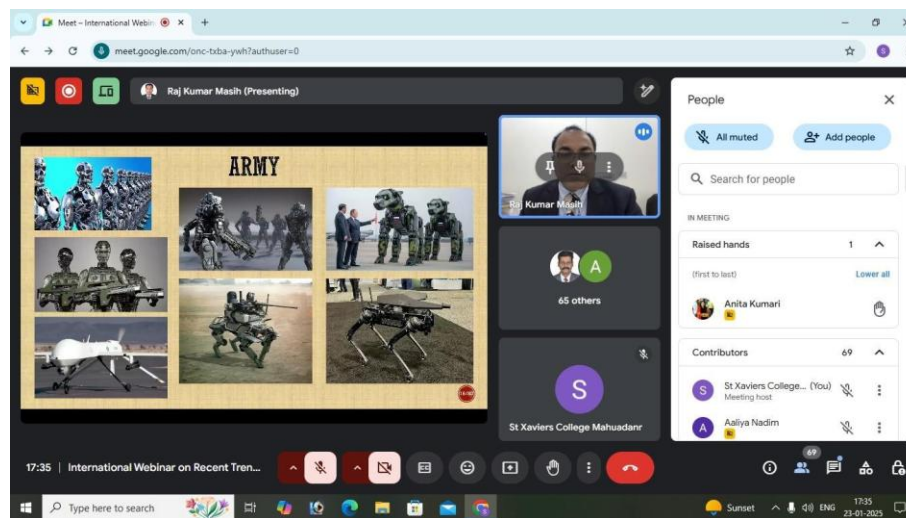
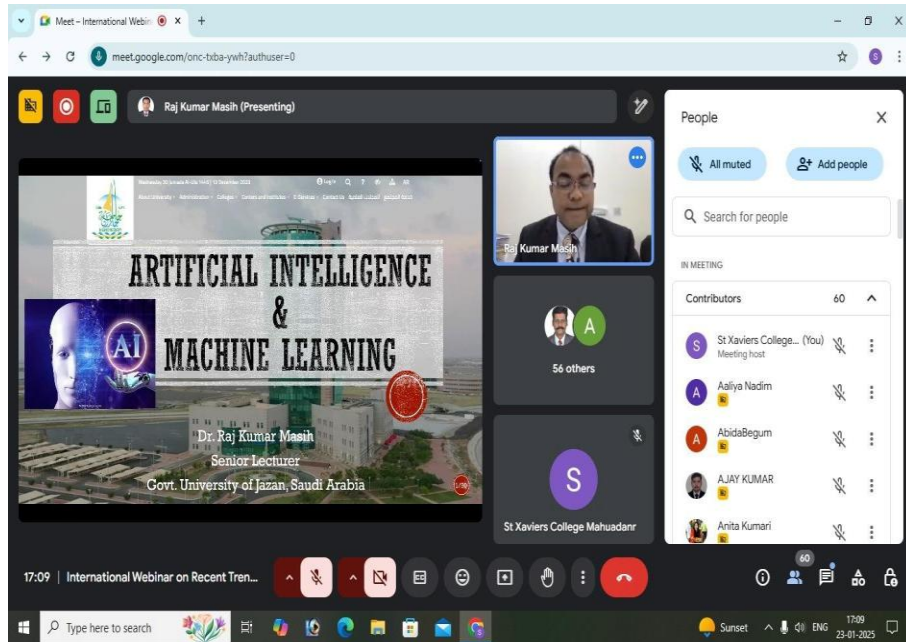
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## Report of Day 5 of the Five-Day International Webinar

- 1. Title of the Program:** Five Day International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges
- 2. Organizing Cell:** SXCM in collaboration with IQAC
- 3. Date:** 24.01.2025
- 4. Number of Participants:** 67
- 5. Topic of the Webinar:** Structure-Based Drug Design: Insights and Innovation

### 6. Objective:

The objective is to understand the role of structural biology in drug design, focusing on how molecular structures of proteins and biological targets interact with drug molecules. The integration of bioinformatics and computational tools, such as molecular docking and simulations, helps optimize these interactions, streamlining drug development and accelerating discovery. This fosters innovation and interdisciplinary collaboration to create targeted treatments for global health challenges.

### 7. Detailed Description of the event:

The Five-Day International Webinar series on “**Recent Trends in Interdisciplinary Research and Complex Global Challenges**” was organized by St. Xavier's College in collaboration with the IQAC of the college. The event aimed to bring together experts, faculty, academicians, professionals, and scholars from across the globe to discuss critical global challenges and the need for interdisciplinary research to address them.

The webinar commenced with a welcome note by Asst. Prof. Surabhi Sinha, who took the lead in organizing the event. She beautifully anchored the entire webinar, ensuring smooth transitions between sessions and engaging the audience effectively. She guided the participants through the session flow, making sure everyone remained involved.



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Following her, Asst. Prof. Karen delivered a warm welcome address, setting the tone for the event.

On Day 5 of the webinar, Dr. Ramakrishna Meduri addressed the participants as the keynote speaker. He provided insightful perspectives on the topic “**Structure-Based Drug Design: Insights and Innovations**” which highlighted the convergence of science, technology, and health to tackle some of the most complex global health issues. He emphasized the role of computational methods in identifying and designing effective pharmaceutical molecules that could potentially address a variety of complex diseases. His talk explored how molecular structures and their interactions with biological targets can lead to more effective drug designs, offering hope for the treatment of various chronic conditions and infections. The session was highly interactive, with Dr. Meduri answering several queries from the audience, making the experience insightful for researchers, faculty, experts, and students alike.

Asst. Prof. Shalini Bara delivered the vote of thanks, expressing gratitude to the resource person, participants, and everyone involved in making the webinar a success. Her closing remarks acknowledged the contributions of all the speakers and attendees, emphasizing the importance of continuing such academic discussions and collaborations.

The principal, Dr. Fr. M. K. Jose, expressed heartfelt thanks to everyone for their active participation throughout the five days of the webinar. He commended the commitment and enthusiasm of the participants and encouraged them to apply the knowledge gained during the sessions to their research and academic pursuits. The principal also emphasized the college's efforts to encourage global collaboration and provide a platform for sharing knowledge on important global issues.

## 8. Outcome:

The session provided participants with a deeper understanding of structure-based drug design and its importance in addressing complex global health challenges. Participants gained insights into how computational methods and molecular modeling play a crucial role in identifying and designing effective pharmaceutical molecules. The discussion



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on the interactions between molecular structures and biological targets broadened their knowledge on drug development, particularly for chronic conditions and infections. The interactive session allowed participants to engage with the speaker, clarifying doubts and gaining valuable knowledge that will aid researchers, faculty, experts, and students in advancing their understanding of drug design and its applications in modern medicine. The Five-Day International Webinar on “Recent Trends in Interdisciplinary Research and Complex Global Challenges” was a resounding success. It provided an excellent platform for researchers, students, and academics to explore the latest developments in interdisciplinary research and discuss potential solutions to global challenges.

## 9. Brochure:

**St. Xavier's College**  
Mahuadanr  
Latehar, Jharkhand 822119

ACCREDITED WITH GRADE  
**A+**  
NAAC

**International Webinar on Recent Trends in Interdisciplinary Research and Complex Global Challenges**

**Day-5**  
Structure-Based Drug Design:  
Insights and Innovations

**Dr. Ramakrishna Meduri**  
Krasnow Institute for Advanced Neuroscience  
GMU-USA

## 10. Photos:

ram (Presenting, annotating)

meet.google.com/vsc-xidu-mvd?authuser=0

Verify it's you

Drug Discovery → Clinical Testing → Approval for Production

Target Identification → Lead Discovery → Lead Optimization → Preclinical Testing → Phase I, II, III → FDA/EMA Review & Approval → Post-approval

7-10 years  
\$600M-\$800M  
~200 enter preclinical testing

6-12 years  
\$1.2B-\$1.4B  
~5 enter clinical testing

1-2 years  
~\$50M  
1 approved by FDA/EMA

ram, Karishma KK, Karen Rennette..., Amrit Minj, St Xavier Colle..., Ronit Marcel, 43 others, Shalini Bara

6:11 PM | vsc-xidu-mvd

Search

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The slide displays a network diagram with 'DISEASE' at the center, connected to 'DRUG' and 'TARGET'. Surrounding nodes include 'Transcriptional signatures', 'Protein comparison', 'Biosite detection', 'Docking', 'Ligand similarity', 'Machine learning', and 'Data mining'. The slide lists several bullet points:

- Relational network-based analysis of biological systems
- Analysis of the patterns and prediction of the missing links
- Data extrapolation
- Data analysis and visualization
- Statistical pattern recognition
- Model development for biological system analysis
- Ligand similarity assessment
- Prediction of ligand cross-reactivity
- Analysis of molecular transcriptional signatures
- Comparison of drugs mechanism of action
- Target similarity assessment
- Prediction of ligand cross-reactivity
- Detection of putative binding pockets
- Ligandability assessment
- Prediction of ligand-protein molecular interactions
- Drug-based repurposing
- Reverse docking for target-based repurposing

The slide shows a software interface for molecular docking. On the left, a 'Parameter' panel includes:

- File: Center, View: Help
- Map: 2048383
- Grid size: 126
- Number of points in x-dimension: 126
- Number of points in y-dimension: 126
- Number of points in z-dimension: 126
- Spacing (angstrom): 10.481
- Center Grid Box: offset=0.889
- x center: 33.67
- y center: 43.275
- z center: 34.478

The main area shows a 3D molecular model with a grid overlay.

The slide illustrates a flowchart of data analysis and its impact:

- Transcriptome** (top) feeds into **Omics**.
- Proteome** and **Metabolome** also feed into **Omics**.
- Omics** feeds into **Epigenome** and **Genome**.
- Epigenome** and **Genome** feed into **Big Data Analytics Systems & Informatics AI Algorithms**.
- Social & Behavioural Data** and **Environmental Impact** also feed into the central AI algorithms.
- The central AI algorithms feed into **Digital Health**.



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## **Outcome of the Webinar: -**

There was an active number of participations in all the 5 days of the webinar with active engagement through Q&A sessions and discussions as this webinar aided diverse representation from academia and research institutions.

Along with that there were expert talks on cutting-edge topics decided for each day. This also included case studies, real-world applications, emerging trends and future directions.

This webinar created connections among global researchers and professionals so that it could initiate potential research and academic collaborations. This increased opportunities for future partnerships and joint projects.