Report

on

Expert talks and Panel discussion

organized by the Department of Biomedical Engineering under the initiative of Industry Institution Collaboration Cell (IICC)

at

HIRA Auditorium

Date - 14th October 2025

Department of Biomedical Engineering

National Institute of Technology Raipur, (C.G.)

Objectives

1. To facilitate meaningful interaction between industry experts and students for wider opportunities for students.
2. To discuss emerging trends and solutions in biomedical engineering and technologies.
3. To recognize and appreciate contributions from collaborating teams and dignitaries.
4. To discuss information from the lab to the Clinic and the Clinic to the real world, students are encouraged to move into entrepreneurship, giving world-class quality.

The Department of Biomedical Engineering organized an Expert talk and a Panel discussion under the Industry Institute Collaboration Cell.

The expert talk started with an inaugural speech by Dr Sudip Paul, Department IICC coordinator. He welcomed the experts and expressed gratitude to them. Followed by a Speech by Prof. N. V. Ramana Rao, Director, NIT Raipur, in which he included a lot of scientific terms like vaccines and other information related to biomedical engineering.

- Following this, we had an expert talk by ***Dr Goutam Bhattacharya, CEO, LSSSDC (Life Science Sector Skill Development Council)***, New Delhi, which covered topics such as vaccines, retroviruses, Niti Aayog, Medical devices, and opportunities. He also discussed Atmanirbhar Bharat, the skill sets required for acquisition, and the manufacturing components of India, highlighting existing skill gaps. He also shared pathways to Entrepreneurship in biomedical engineering, starting with identifying a real-world problem. 2. Leverage Technical Expertise 3. Collaborate Across Disciplines. 4. Secure Funding 5. Build and Validate Prototypes 6. Navigate Regulations 7. Scale and Market. He also shared the Scheme for Promotion of Research and Innovation in the Pharma MedTech Sector. He also shared the scope of Innovation for Biomedical Engineers, which included AI-powered diagnostics and algorithms for faster, more accurate disease detection. Wearable Health Tech – Devices for real-time chronic condition monitoring, 3D Bioprinting and Regeneration – Lab-grown tissues and biodegradable implants. Smart prosthetic Bionics- Brain-controlled limbs and adaptive mobility aids. Robustic Surgery- Precision tools for minimally invasive procedures. Nanotech Drug Delivery- Targeted treatment with fewer side effects. Biomedical Imaging- Enhanced scans and automated interpretation. Also shared information about bioprinting and small prosthetics. He also encouraged students to use natural

intelligence instead of artificial intelligence. In the field of Biomedical Engineering, collaboration will also be key.

- The second session was taken over by ***Mr. Vikramaditya Tirthani, CEO, Vensi Pvt. Ltd., Naya Raipur,*** who began by asking students if they preferred professional talks or personal anecdotes. The students opted for stories, and he shared his own account of investing 13 lakhs, which transformed into a 25 crore company within 3 years. He motivated students with key teachings, such as the importance of internships as game changers. In their first job, they should prioritize learning over earning, exploring as much as possible, and staying updated on industry trends.

- The lecture opened with the idea that meaningful career skills rarely come from textbooks, but from real-life experiences and family legacy.
- Emphasis was placed on learning from hardships, embracing uncertainty, and remaining curious throughout one's career.
- The speaker traced his evolution from fundamental engineering roles through hospital practice, sales roles at Johnson & Johnson, and rapid career advancement.
- He detailed founding and scaling startup ventures, including substantial growth from debt to major turnovers, as well as the challenges of building AshaDidi and a ventilator.
- Key advice included that the quality and safety of manufactured devices should be paramount, especially in healthcare, and that innovation is an ongoing, challenging process.

- Engineering begins where textbooks end—shop floors and real-world projects offer far more rigorous learning than classrooms.
- Internships and first jobs should be chosen for the learning opportunities more than monetary reward, as real-world grit and problem-solving matter most.
- Each decade brings a new wave of the industrial revolution; for the coming years, medtech and indigenous manufacturing are critical for India.
- Freshers are valued for their curiosity, adaptability, communication skills, and willingness to solve problems, rather than just their marks.
- Documentation, compliance, testing, and specific domain knowledge are still under-explored in India and represent key skills that set candidates apart.
- Treat the first years of a career as a training ground—success will follow sustained effort, curiosity, and a mindset for innovation and improvement.
- Real-life anecdotes illustrated the importance of humility, honesty, and hunger for meaningful work.

The lecture inspired students to value real-world experiences over theoretical knowledge, embrace innovation, take risks, and contribute to India's healthcare revolution through indigenous technologies and ethical engineering practices. The speaker invited students to connect for mentorship and career guidance, emphasizing that their own journey was beginning.

- The next session was led by ***Dr Upasana Kachroo, Associate Professor, Department of Physiology, AIIMS, Raipur,*** who spoke about the invention's development. She also discussed the work and vision of Dr. Upasana Kachroo on regenerative medicine and technological innovation for cartilage repair. Dr. Upasana Kachroo is recognized for pioneering research in cartilage biology, regenerative therapies, and translational medicine. Her focus is on bridging laboratory science with clinical applications, particularly in osteoarthritis, where cartilage degeneration poses a significant challenge due to its avascular nature and poor self-repair capability.

Lecture Overview

- Dr. Kachroo began by engaging the audience on why cartilage is so difficult to heal, referencing scientific studies and her own research. She emphasized the fundamental issues of cartilage degeneration and OA pathology.
- The interaction encouraged participants to imagine how they might design cartilage for improved repair, highlighting tissue engineering needs.
- The talk reviewed current practices, challenges, and advances in engineered materials and organoid systems for cartilage repair, referencing breakthroughs in organoid research and dynamic biological signals.
- Reference was made to Dr. Kachroo's publications, including comparative studies of human chondrocytes and chondroprogenitors, establishing electrophysiological and gene expression differences in normal versus OA cartilage.

Technological Advances Discussed

- **Microfluidics & Organ-on-Chip:** Emerging technologies such as joint-on-a-chip (JOC) models provide precise platforms to simulate complex joint microenvironments. Advancements in microfluidic and bioprinting methods have enabled both microengineering signals for regeneration and detailed preclinical modeling.
- **Organoid Platforms:** Organoids offer unprecedented ability to mimic human tissue, allowing more accurate drug testing and biological research than traditional models. Combining organoid science with microfluidic chips opens the way for innovation in in vitro OA studies and patient-specific treatment strategies.
- **3D Bio printing:** Integration with microfluidics enables fast, affordable production of new devices and personalized tissue constructs for functional testing and clinical application.
- **Prototype and Validation:** Early biomaterial and device development supported by agencies like BIRAC and BioNEST.
- **Functional Testing and IP Protection:** Rigorous studies and design registration, leveraging innovation grants.
- **Spin-off and Commercialization:** Launch of regenerative startups and partnerships with national innovation missions such as Startup India and Make in India initiatives.
- **Clinical Trials and Implementation:** From GMP-grade protocols to long-term outcome tracking in joint repair therapies.

This session exemplified the cutting-edge intersection of biotechnology, engineering, and healthcare, encouraging students and professionals to pioneer solutions that could transform lives and impact the future of medicine." focused on advancing cartilage repair sciences through innovation in microfluidics, organoid platforms, biomaterials, and translation of lab research into clinical therapies, led by Dr. Upasana Kachroo.

- Lastly, it was a panel discussion, coordinated by Dr Sudip Paul. Mr Goutam Bhattacharya suggested that we should focus on achieving world-class quality and also consider unsubscribing from Instagram. The next question was forwarded to Mr. Vikramaditya Tirthani, who inspired students to love their work, ensuring that things would align in their favor. The next panel discussion question was sent to Dr Upasana Kachroo, who shared insights about BIRAC, IDEC, and Axiosat, particularly in the context of wound healing. She encouraged students by emphasizing that ideas are everywhere and that we need to seize them. The panel discussion, summarized by Dr. Sudip Paul, conveyed that the study never ends and that anyone can impose an idea. Whatever we want to do, we have to do it from the bottom of our hearts.

Lastly, the vote of thanks was given to Dr Arindam Bit, who appreciated the experts and all the efforts of the team.


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Future of Cartilage
Repair- Intersecting
Biology and
Bioengineering
Dr. Upasana Kachroo
AIIMS Raipur
IICC Industry-Academia Meet, NIT Raipur
(Oct 14, 2025)
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How it is....
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SERVICE ENGINEER
MAN MACHINE ELECTRONICS
BIOMEDICAL ENGINEER
POONA HOSPITAL
ASHA MEDICAL SYSTEM
ENGINEERING STUDENT
RITEE, RAIPUR
PRODUCT SPECIALIST
J&J
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Life Sciences S
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India Medical Device
10-Aug-2023 — The market si
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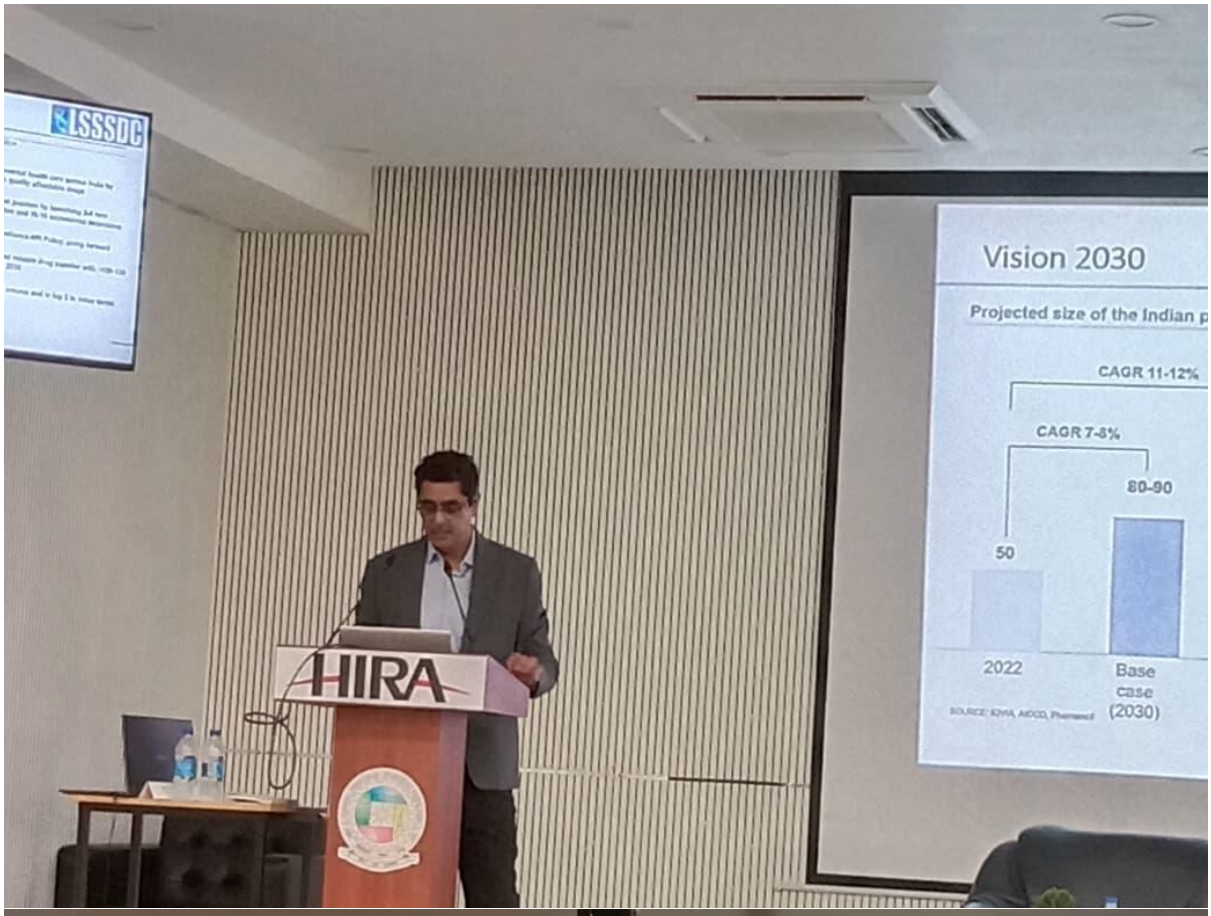
LSSSDC
Vision 2030
Projected size of the Indian p
CAGR 11-12%
CAGR 7-8%
80-90
50
2022
Base case (2030)
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Life Sciences Sector – Medical Devices
LSSSDC
$11 billion
The market size of the medical devices sector in india is estimated to be $11 billion (approximately, ₹ 90,000 Cr) in 2020 and its share in the global medical device market is estimated to be 1.5%.
Cabinet approves the Policy for the Medical Devices Sector - PIB
US$ 50 Billion by 2030
ET HealthWorld
India Medical Devices to become $50billion industry soon ...
10-Aug-2023 — The market size of the Indian medical devices sector is likely to reach $50 billion in coming years from the current $11 billion, said ...
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India has played a significant role in global healthcare
36%
95%
60%
37%
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NCVET
Skill India
ISSSDC
Shaping India's Life Sciences Future
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