



JBM SHST

Jyoti & Bhupat Mehta School of
Health Sciences & Technology



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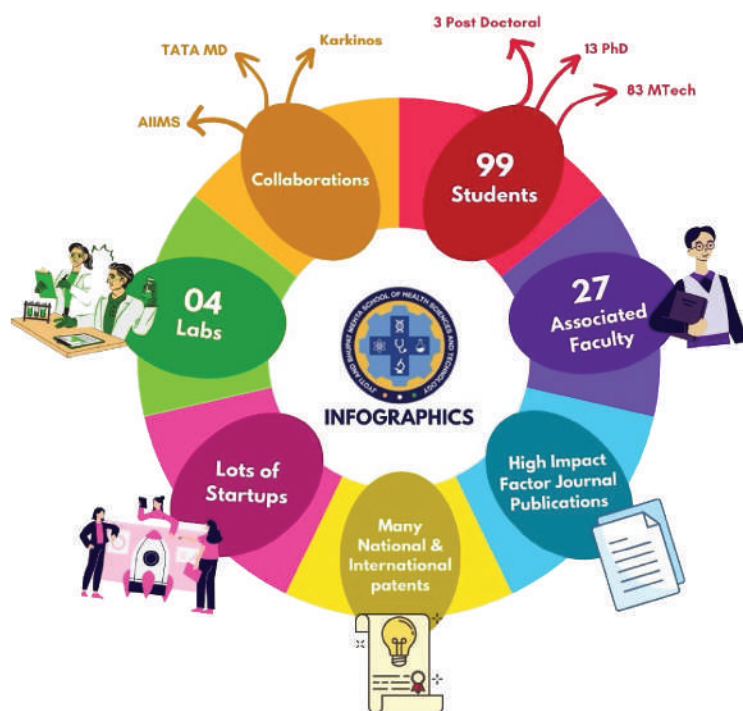


Prelude

The Jyoti and Bhupat Mehta School of Health Sciences and Technology (JBMSHST) at IIT Guwahati, established in the year 2021, is partially funded by the the Mehta Family Foundation under their initiative to create intellectual talent through global academic collaboration.

It aims to train biomedical engineers to take leadership responsibilities in the health sector. The learning here is oriented to gain an interdisciplinary understanding of engineering, bio-chemical science, humanities, and design principles through hands-on experiences.

The focus is to bring scientific and technologic innovation to support health science and allied areas. JBMSHST is an important initiative at IIT Guwahati that bridges the gap of highly skilled personnel that exists in these emerging fields.





Mission



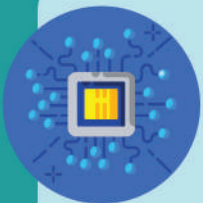
Multidisciplinary Education

A Multi-disciplinary Environment with Doctors, Engineers, Entrepreneurs, Administrators, & Regulators



Scientific Inventions

Inculcate Deeper Science, Innovate Novel Principles, Master the Scientific Inventions and Innovations



Technological Solutions

Translate the Scientific Knowledges into New Generation Healthcare Technology Innovations and Discovery



Import Substitution in Healthcare

Invent and Innovate Indigenous Technologies with the aim of Employment and Sustainability, making a global impact



Skilling of Human Resources

Robust and Futuristic Academic Curricula with a Special Emphasis on Hands-on Training and Upskilling
Pioneer in providing affordable, evidence-based and quality medical care

Maintain utmost ethical and professional standards while employing best management practice to achieve patient satisfaction



Vision

The school envisions:

- To inculcate futuristic academic curricula, state-of-art research facilities, high-impact R&D, National and International collaborations, and translation in the areas related to biomedical science and engineering.
- To indulge into deeper scientific aspects related to medicine and develop technologies, which help in ensuring 'Health for All'.
- To upskill the young bright minds of the country, following the footsteps of Atmanirbhar Bharat, Digital India, Unnat Bharat Abhiyan, Make-in-India, Start Up India, and Ayushman Bharat, who can lead and catalyse the invention of novel scientific principles and develop the new generation of technologies while assuming the role as the torch-bearer to the rest of the world.

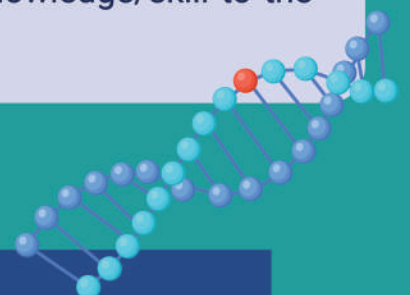
In this direction, the school is planning to build an academic cum research framework that will,

- Foster cutting-edge research, invention, innovation, and manufacturing of biomedical technologies
- Establish new standards and methods of health sciences education
- Build efficient and cost-effective equitable healthcare facilities
- Create a shield of evidence-based affordable healthcare
- Promote public health education

The school is expected to train the gen-next academic leaders of the country to promote an upshift in the science and technological inventions under the guidance of the world class educationists, physicians, engineers, administrators, regulators, and entrepreneurs.

The major targets in this regard will be to perform high impact research under the umbrella of an academic curriculum that has a special emphasis on the hands-on training to substantiate the goal of 'Employment for a Billion'.

- Deliver evidence-based, affordable and patient-centred care with purpose, innovation and compassion
- Define the standards of care and facilitate the transfer of knowledge/skill to the healthcare professionals



FACULTY PROFILES

HEAD OF THE SCHOOL



PROF. S. KANAGARAJ
Current HOD (October 2024- Present)
Biomaterials Carbon nanotubes
Biomed devices and implants



PROF. DIPANKAR BANDYOPADHYAY
Former HOD (April 2021 - October 2024)
Synthesis and applications of
micro/nano motors, MEMS

PROFESSOR



PROF. PARAMESWAR K. IYER
Bio and Chemosensors



PROF. ROY P PAIY
VLSI and MEMS



PROF. SIDDHARTHA S. GHOSH
Cancer Therapeutics, Exosomes and Notch
signaling in cancer



PROF. G KRISHNAMOORTHY
Organic Photochemistry & Spectroscopy



PROF. HARSHAL B. NEMADE
Ultrasonic measurement,
Non-destructive testing



PROF. BIMAN B MANDAL
Cell based tissue engineering, Biomaterials, Stem
cells, Drug delivery system



PROF S.K. DWIVEDY
Design



PROF. TAPAS K MANDAL
Point-of-care techniques in
diagnosis of Glucosars



DR. BITHIAH G JAGANATHAN
Stem Cell Biology, Cancer signalling



PROF. RANJAN TAMULI
Calcium signalling, Genetics,
DNA repair



PROF. CHANDAN MUKHERJEE
Development of MRI Contrast Agents



PROF. BHISMA K PATEL
Bio-Organic Chemistry



PROF. SUBHENDU S BAG
Bio-Organic/Medicinal Chemistry of
Nucleic Acids, Peptides

ASSOCIATE PROFESSOR



Dr. Uttam Manna
Bio-Inspired Polymer Materials, Drug Delivery



Dr. Raghendra Gupta
Multiphase flow, Microfluidics and micro process engineering



Dr. Partho S. G. Pattader
Stochastic dynamics, Colloid and Interface science



Dr. A. S. Akshai
Organometallic Chemistry, Inorganic Chemistry, Organofluorine Chemistry



Dr. Krishna P. Bhabak
Fluorogenic Drug Delivery



Dr. Urmi Salve
Human Factor Engineering, Cognitive Ergonomics, Research Methodology

ASSISTANT PROFESSOR



DR. RAJIV K KAR
Biosensors, Nanotechnology, Biotechnology, Molecular Simulations



DR. SUBRATA PRAMANIK
Molecular and Cellular Basis of Physiology and Pathophysiology



DR. NARAYANASAMY SELVARAJU
Advanced Oxidation Process, Enzyme mediated bioremediation, Microfluidics



DR. PALASH GHOSH
Personalized Medicine, Case-Control Study, Design and Analysis of Clinical Trials



FELLOW



DR. HARISH TIWARI
One Health, large animals' disease investigation and welfare



DR. SANJIB CHAUDHARY
Molecular mechanism of lung metastasis Cancer Biology

VISITING FACULTY



Dr. Erwin Fuhrer
MRI, NMR, MR Safety, Hardware design

STAFF MEMBERS



Gobinda Chhetry
Technical Officer Grade - II



Anand Swarup S
Junior Technical Superintendent



Indrajit Talukdar
Junior Technical Officer



Nayan Mani Bania
Junior Technical Superintendent



Sandhan Sarma
Junior Technical Superintendent

STAFF MEMBERS



Gautam Barman
Junior Assistant



Ayon Kumar Paul
Junior Office Attendant

PROGRAM MANAGEMENT UNIT



Dr. Jyoti Jain
Project Engineer



Alakesh Bezbaruah
Assistant Project Engineer



Triveni Barman
Administrative Assistant

MTech Students

MEDICAL DEVICES AND DIAGNOSTICS (BATCH 2024-26)



Akashdeep Singh
244159001



Ashish Pandey
244159002



Kashif Ali Shaikh
244159003



Manjeera S K Palagummi
244159004



Matti Dondor Majaw
244159005



Nivedhya Suresh
244159006



Nrapendra
244159007



Sai Mounika Papala
244159008



Sai Yalgam
244159009



Sharvani Pokala
244159010



Swarnima Singh
244159011



Vaishnavi Srivastav
244159012



Yash Kumar Gupta
244159013



Ankit Ranjan
244159014



Hariharan P
244159015



K S Ranjith Kumar
244159016



Nayan Prakash
244159017



Nidhish Vandekar
244159018



Rudrasish Mukherjee
244159019



Sai Hari Hara Sudheshna Ch
244159020

REGENERATIVE MEDICINE, STEM CELL AND THERAPEUTICS (BATCH 2024-26)



AISHWARYA SWAIN
244159101



KARTHIKEYAN KANDHAN
244159106



RUCHALI TAYADE
244159111



AYUSH LAKHERA
244159116



ANJALI KUMARI
244159102



LALNUNHLIMI SAILO
244159107



KHOT RUSHIKESH
244159112



PARIJAT ROYCHOWDHURY
244159117



BRITLIN DEVA JEBASTAN
244159103



MOHAMMAD NOMAN
244159108



SANJOY KUMAR BASU
244159113



PRATIBHA
244159118



CHINMAY ARORA
244159104



PRINCE KUMAR
244159109



SUBRAMANIAN V
244159114



RITESH KAMBLE
244159119



HARSH PATEL
244159105



ROBIN KAIM
244159110



TRUPTI SAHOO
244159115



VIPUL SAINI
244159120

MEDICAL DEVICES AND DIAGNOSTICS (BATCH 2023-25)



REGENERATIVE MEDICINE, STEM CELL AND THERAPEUTICS (BATCH 2023-25)



MEDICAL DEVICES AND DIAGNOSTICS (BATCH 2022-24)



From left to right: First standing row (Vishal Tande, Shekhar Jyoti Nath, Shobit Kumar Singh, Shubham Sanjay Agrawal, Neeraj Kumar Bharti, Aniket Kumar, Nithin S, Inampudi Vamsinath) Second standing row (Zainab Shabbir Sariya, Shweta Tiwari, Pooja, Suchismita Dhar, Nilakshi Thakuria) Sitting row (Tarun Hawdia, Bhaskar Taye)

PhD Students



Vishal Tande
Enrollment number : 246159003
Joining Year : 2024



Nirupam Dae
Enrollment number : 236159007
Joining Year : 2023



Sidharth Dashaharma
Enrollment number : 236159102
Joining Year : 2023



Sonia Sarangi
Enrollment number : 236159006
Joining Year : 2023



Shreejata Ghosh
Research Area :
Enrollment number :
Joining Year : 2023



Rahul Deka
Research Area : Microfluidics based
applications
Enrollment number : 236159004
Joining Year : 2023



Sheetal Das
Research Area : Biosensor design for
metabolite detection
Enrollment number : 226159101
Joining Year : 2022



Harini Devi M
Research Area :
Enrollment number : 236159003
Joining Year : 2023



Dr. Anuja Dutta
Research Area : Medical Microbiology
Enrollment number : 236159002
Joining Year : 2023



Arpan Kotal
Research Area : Photosensors' based
on protein biochemistry
Enrollment number : 236159001
Joining Year : 2023



Sreemoyee SenSharma
Research Area : Cancer, Neuroscience,
Regenerative Medicine
Enrollment number : 226159004
Joining Year : 2022

INTERNATIONAL STUDENTS



Amit Kumar Sah (Nepal)
Course : PhD
Enrollment number : 236159008
Joining Year : 2023

POST DOCTORAL STUDENTS

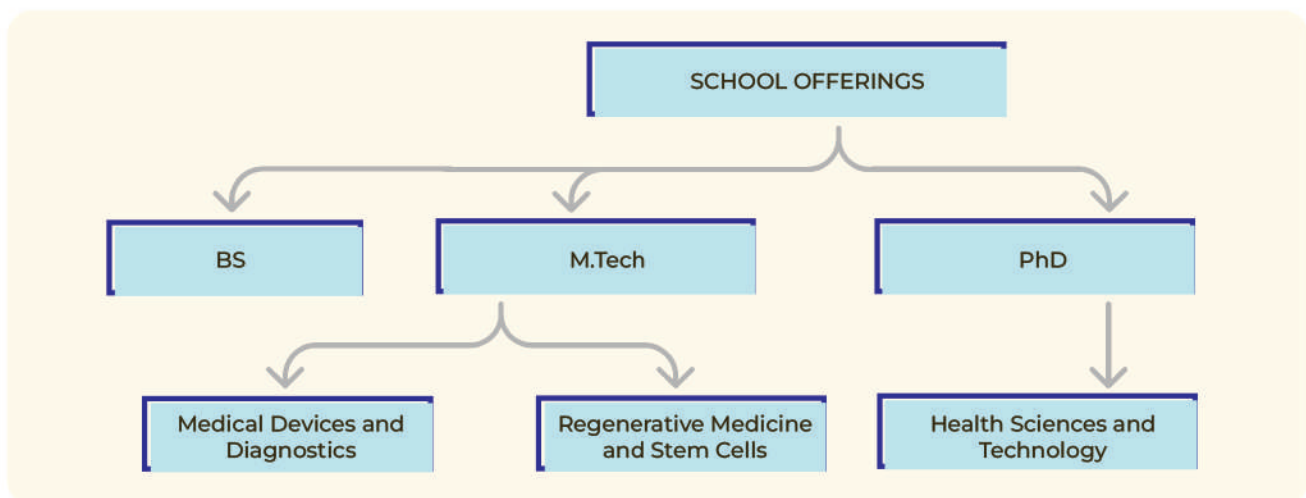


Dr. Arup K. Dey
Research Area : Quantum dot and sensing
Joining Year : 2024

Academic Curriculum



The National Education Policy – NEP 2020 has emphasized the necessity of academic programs at the various levels of education, which inculcates multidisciplinary trainings to the students/scholars with a significant stress on the hands-on training. The major objective of such academic curricula includes not only to train and upskill the bright minds of the country with real-life laboratory scale experience but also to improve their employability by connecting their education to the translational activities. In this direction, medical science and technology is one such multidisciplinary field where the scientific, technological, and design interventions from diverse disciplines of engineering, pure science, social science, and design have been significant. For example, the specialties like diagnostics, systems biology, bioinformatics, regenerative medicine, data science and analytics, tissue engineering, stem cell research, public health, and prosthesis, among many others, have found their major footprint in the technological realm in the recent years.



The Master of Technology curricula in Biomedical Science and Engineering at the JBMSHST is designed to provide the incoming students, a foundation of knowledge related to the modern biomedical technologies within the broader perspective of the health science and technology. The courses are designed to offer introductory as well as advanced study modules and also some courses on research methodology, regulatory aspects of technologies, intellectual property rights, publication and patent writing among others.



BIOLOGY COURSES

- Cellular Processes
- Physiology For Clinical Immersion
- Advanced Immunology
- Tissue Engineering and Regenerative Medicines
- Stem Cell and Therapeutics



MATHS & ANALYTICS

- Mathematical Modelling and Simulation
- Data Visualization
- Health Data Analytics
- Research Methodology
- Ethics, IPR
- Entrepreneurship and Biosafety



ADVANCED COURSES

- Biomechanics
- Computational Fluid Dynamics
- Biomedical Electronics and Instrumentation
- Deep Learning
- Biomedical Image Processing
- Machine Learning and Artificial Intelligence



LABS

- Product Design and Prototyping Laboratory
- Diagnostics & Devices Laboratory
- Biotechniques and Bioinstrumentation Laboratory
- Regenerative Medicine and Stem Cells Laboratory

In the beginning of the curricula, the students arriving from the diverse disciplines are to be trained with a set of compulsory core courses drawn from different disciplines in the first semester. After the build-up of the foundation through this activity, in the second semester, the program offers to specialize through the electives and undergo hands-on training through the laboratory courses. In the third and the fourth semesters, the students would take up a research project along with exploring and specializing their knowledge base by taking one elective of their choice from any department in each semester.

Overall, the proposed curricula of M.tech in Biomedical Science and Engineering has two specialisations,

(i) Medical Devices and Diagnostics

(ii) Regenerative Medicine, Stem cell and Therapeutics

Further, addition of specializations such as bioinformatics, public health, and health data science and analytics, to these curricula is expected to happen in the years to come.



M Tech in Biomedical Science and Engineering: Medical Devices and Diagnostics (MDD)

Semester I					
Course	Course Name	L	T	P	C
HT501	Introduction to Cellular Processes	3	0	0	6
HT502	Basic Physiology for Clinical Immersion	3	0	0	6
HT503	Introduction to Biomedical Electronics and Instrumentation	2	1	0	6
HT504	Basics of Mathematical Modelling and Simulation	2	1	0	6
HT505	Research Methodology, Ethics, IPR, Entrepreneurship and Biosafety	2	1	0	6
Total Credit					30

Semester II					
Course	Course Name	L	T	P	C
HT506	Biotechniques and Bioinstrumentation Laboratory	0	0	3	3
HT507	Diagnostics & Devices Laboratory	0	0	3	3
HT508	Product Design and Prototyping Laboratory	0	0	3	3
HT xxx	Elective from Pool I	3	0	0	6
HT xxx	Elective from Pool II	3	0	0	6
HT xxx	Elective from Pool III	3	0	0	6
Total Credit					27

Semester III					
Course	Course Name	L	T	P	C
HTXXX	Elective	3	0	0	6
HT598	Project – I	0	0	18	18
Total Credit					24

Semester IV					
Course	Course Name	L	T	P	C
HTXXX	Elective	3	0	6	6
HT599	Project – II	0	0	18	18
Total Credit					24

Total Credits 105



M Tech in Biomedical Science and Engineering: Regenerative Medicine, Stem cell and Therapeutics (RMSCT)

Semester I					
Course	Course Name	L	T	P	C
HT501	Introduction to Cellular Processes	3	0	0	6
HT502	Basic Physiology for Clinical Immersion	3	0	0	6
HT503	Introduction to Biomedical Electronics and Instrumentation	2	1	0	6
HT504	Basics of Mathematical Modelling and Simulation	2	1	0	6
HT505	Research Methodology, Ethics, IPR, Entrepreneurship and Biosafety	2	1	0	6
Total Credit					30

Semester II					
Course	Course Name	L	T	P	C
HT506	Biotechniques and Bioinstrumentation Laboratory	0	0	3	3
HT508	Product Design and Prototyping Laboratory	0	0	3	3
HT509	Regenerative Medicine and Stem Cells Laboratory	0	0	3	3
HT 510	Tissue Engineering and Regenerative Medicines	3	0	0	6
HT 511	Stem Cells and Therapeutics	3	0	0	6
HT xxx	Elective from Pool I				6
Total Credit					27

Semester III					
Course	Course Name	L	T	P	C
HTXXX	Elective	3	0	0	6
HT598	Project – I	0	0	18	18
Total Credit					24

Semester IV					
Course	Course Name	L	T	P	C
HTXXX	Elective	3	0	6	6
HT599	Project – II	0	0	18	18
Total Credit					24

Total Credits 105

Awards & Honours



Prof. Akshai Kumar A. S. – INYAS Fellow.



Prof. Biman B. Mandal – Swarna Jayanti Fellow



Prof. Dipankar Bandyopadhyay – Guest Editor, NPJ Flexible Electronics, BIRAC SRISHTI Appreciation Award 2022, Best Startup 2022



Prof. Parameswar Krishnan Iyer – Editorial Advisory Board Member ACS Sensors January



Dr. Rajiv K. Kar - Graphene Oxide Unveiled: IIT Guwahati Researchers Bridge Biomedical Innovation and Hands-on Education



Dr. Subrata Pramanik – Fellow of Indian Chemical Society (FICS), Indian Chemical Society, Kolkata, India, August 2023



Prof. Uttam Manna – Humboldt research fellow, INSA Young Scientist, FRSC

Press Release: Dr. Rajiv Kar's research on biomedical innovation and hands-on education was highlighted by newspaper and online media. https://iitg.ac.in/iitg_press_details?p=80%2Fresearchers-bridge-biomedical-innovation-and-hands-on-education IIT Guwahati researchers discover use of modified graphene oxide in biomedical applications:

Read more at:

<https://health.economictimes.indiatimes.com/news/pharma/research-development/iit-guwahati-researchers-discover-use-of-modified-graphene-oxide-in-biomedical-applications/105062802>





Scholastic Achievements by Students



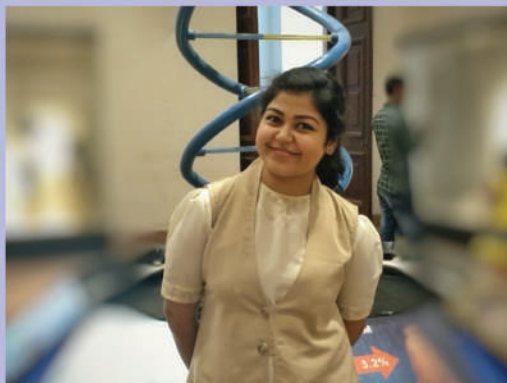
Shubham Agrawal

Khorana Program for Scholars
Reliance Foundation Postgraduate
Scholarship



Plaboni Sen

Asima Chatterjee Memorial Award" for
the Best Researcher in "7th World
Cancer Congress" held in Bangalore,
2022



Sahil Jagnani & Ankit Chowdhuri

Top 3 Startup in Health care.
Finalist (top 20) in Quest for Health
care Innovation.
Birac Ignition Grant



Sheetal, PhD Scholar

Best Oral Presenter for the talk at the
8th International Conference on
Advanced Nanomaterials and
Nanotechnology (ICANN 2023).
Best Poster at INUP i2i at the Offline
Familiarization Workshop



Projects and Skills

Simulations



- ◆ Computational Fluid Dynamics
- ◆ Protein Dynamics
- ◆ Drug Interaction

Tissue Culture



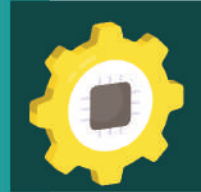
- ◆ Genetic Engineering
- ◆ Drug Testing
- ◆ Regenerative Medicines

Custom Medical Devices



- ◆ Prosthetics
- ◆ Implantable Devices
- ◆ Custom Stents

PoC Devices



- ◆ Lab-on-a-Chip
- ◆ Biosensors
- ◆ Internet of Things

Medical Image Processing



- ◆ Medical Imaging
- ◆ Image Processing
- ◆ Computer Aided Diagnosis

Bioinformatics



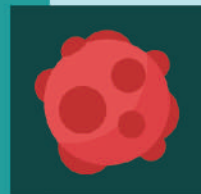
- ◆ Computational Modeling
- ◆ Data Mining
- ◆ Computational Biology

Health Data Analytics



- ◆ Machine Learning
- ◆ Deep Learning
- ◆ Genomic Data Analysis

Cancer Therapeutics



- ◆ Cellular Reprogramming in 3D in-vitro Models
- ◆ Electric Field Therapy
- ◆ Immunotherapy



Research Facilities and Laboratories



Medical Devices and Diagnostics



Data and Analytics



Biomaterials and Tissue Engineering



Microfluidics



Biotechniques and Bio-Instrumentation



Molecular and Cellular Biology

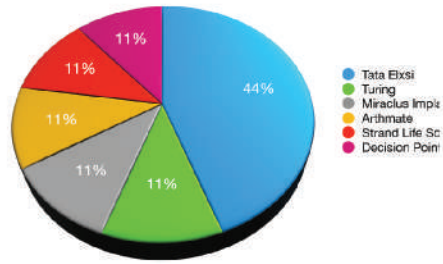
Specialisations of Students (Target Sectors):



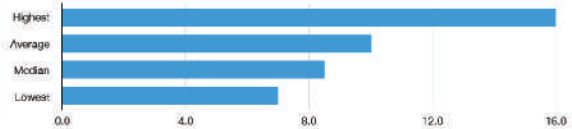
Placements:



Initial Graduating Class Stats



Insight of Packages Offered



Collaborations



Ecosystem around JBMSHST (Startups)



Invited Talks

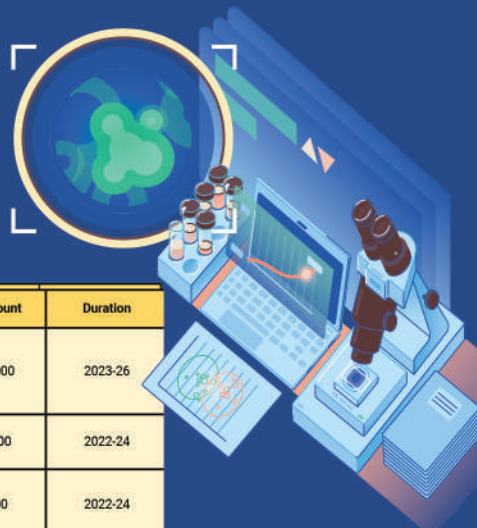
Name	Name of Inst./Univ./Org.	Purpose/ Name of Lecture	Date
Prof. (Lt. Gen.) Ved Chaturvedi	Rheumatologist and Clinical Immunologist, Gangaram Institute of PG Medical Education and Research, New Delhi.	Invited lecture on "Can we manufacture a Needle Arthroscope for clinical use?"	15 th October 2024
Dr. Nilesh Kumar Dubey	Clinical Assistant Professor, Department of Comprehensive Dentistry, University of Maryland, Baltimore	Online Invited Talk on "Biofabrication Technology: In mineralized Tissue Scaffold Engineering"	8 th October 2024
Dr. Naveen Kumar Singh	Assistant Professor, IIT Delhi	Invited Talk on "From Selection to Sensing: One step Aptamer Selection and real time Continuous stress monitoring"	11 th September 2024
Dr. Saurabh Chaturvedi	Assistant Professor, DPSRU, Delhi	Invited Talk on "Inflammation: The Central Culprit"	13 th August 2024
Dr. Nitu Bhaskar	Post Doctoral fellow University of Connecticut, USA	Invited Talk on "A Polymer Composite with Enhanced Piezoelectricity: A Promising Approach for Tissue Engineering in Regenerative Medicine"	5 th April 2024
Dr. Hardik Jeetendra Pandya	Associate Professor, Indian Institute of Science, Bangalore	Invited Talk on "Invasive and Non Invasive Technologies for Neural Engineering"	5 th April 2024
Dr. Mark Palmer	Senior Chief Technologist for Healthcare, Ansys, Inc.	Improving Health Outcomes with Physics-based Simulation Methods	10 th October 2023
Dr. Erwin Fuhrer	Visiting Assistant Professor, School of Computing and Electrical Engineering (SCEE), IIT Mandi	Challenges and Applications of Magnetic Resonance Imaging in Biomedical Research	27 th September 2023
Dr. Prosenjit Mondal	Associate Professor, School of Basic Sciences, Indian Institute of Technology Mandi (IIT Mandi)	Exploring inter-organ communication to uncover mechanisms that regulate β -cell function and Non-Alcoholic Steatohepatitis (NASH)	29 th March 2023
Dr. Naba Goswami	Saint Clairsville, Ohio, USA	Interactive Session JBMSHST	11 th January 2023
Dr. Varun Aggarwala	Assistant Professor and PI of the Microbiome Therapeutics lab, Jio Institute. (Former Icahn School of Medicine of Mount Sinai Hospital)	Precise quantification of bacterial strains after fecal microbiota transplantation explains outcome and candidate strains for Live Biotherapeutics	25 th November 2022
Dr. Mustafa A. Barbhuiya	UMass Chan Medical School, Massachusetts, United States	Invited Lecture Series	8 th November 2022
Prof. Ulrich Schwaneberg	RWTH Aachen University, Germany	Protein Engineering for Innovations in Bio-catalysis and Material Science	30 th August 2022
Mr. Venkataramanan Ramachandran	Karkinos Healthcare Ltd., India	Special Lecture	25 th August 2022
Prof. Alexander Mikheyev	Australian National University, Canberra, Australia	Invited Lecture Series	5 th May 2022





Name of Faculty	Name of Sem./Wor./Con.	Funded By	Date	International/ National	No. of participants
Dr. Rajiv K. Kar	One-day Hands-On Training Workshop on Analytical and Microbial Techniques	DST-SERB	20th March 2024	National	25
Dr. Akshai Kumar A S	Frontiers in Chemical Science 2022	SERB, Oil India, MERCK, Bruker, ChemDist Group of Companies	2nd – 4th December 2022	International	350

Projects



S.N.	Project Title	Project Number	Principal Investigator (PI)	Co-PI	Funding Agency	Total Amount	Duration
1	Evaluation of Cervical Cancer Disease Progression and Testing Strategy by Point of Care Device & HPV Testing in HIV positive Women in Manipur	IIRP-2023-7794/F1	Dr. Rajiv K. Kar	Prof. Dipankar Bandyopadhyay	ICMR, India	150,00,000	2023-26
2	Understanding on/off kinetics of LOV-domain proteins to construct optogenetic tools	SHSTSPNSERB01350xRK K002	Dr. Rajiv K. Kar		SERB, DST, India	30,00,000	2022-24
3	Assessment of modified phenylalanine and tryptophan as probes for imaging and diagnostic application	SHSTSUGITG1350xRKK0 01	Dr. Rajiv K. Kar		RnD, IIT Guwahati	5,00,000	2022-24
4	Characterizing the functional role of the novel Dopaminergic transmembrane protein p20MANI (Myelin-Associated Neurite Inhibitor)	SHSTSPNSERB01356xSU P002	Dr. Subrata Parmanik		SERB, DST, India	32,49,400	2022-24
5	Uncovering the dual function, cell proliferation and neurite outgrowth, of the SRGAP2-FAM72- Master Gene in Neuroplasticity	SHSTSUGITG1356xSUP0 01	Dr. Subrata Parmanik		IIT Guwahati	5,00,000	2022-24
6	DNA Aptasensor Nanomaterial based product development and commercialization for application in Diagnostics and Environmental Monitoring.	SHSTSPNxDBT00771xDP B010	Dr. Dipankar Bandyopadhyay	Dr. Swapnil Sinha	DBT, GOI	29,88,038	2022-23
7	Implementing a comprehensive One Health approach to eradicate Dog mediated rabies from India.	SHSTSPNxDBT01350xHK T001	Dr. Harish Tiwari	Dr. Rajiv K. Kar	DBT Welcome Trust	3,56,40,825	2023-27
8	Project Title is Injectable silk-based hydrogel system loaded with chemotherapeutic agent to treat canine mammary gland neoplasm	SHSTSPNxDBT00857xBB M026-0150	Prof. Biman B. Mandal		DBT	74,90,640	2023-26
9	Silk fibroin carrier for the culture and transplantation of corneal endothelium	SHSTSPNxDBT00857xBB M027	Prof. Biman B. Mandal		DBT	48,64,720	2024-27

Total	6.83 Cr.
BioNEST	17.98 Cr.
C-CARD – Centre for Advanced Research in Cancer Diagnostics, Karkinos Healthcare	70 Cr.
ICMR CoE	15 Cr.
Mehta Family Foundation	25 Cr.
Digital Nerve Centre – Tata MD	3.4 Cr.



Patents



Point-of-care Optoplasmonic pathogen sensor for the rapid detection of urinary tract infection, Mitali Basak, Shirsendu Mitra, Mousumi Gogoi, Swapnil Sinha, Utpal Mohan, Harshal B. Nemade, and Dipankar Bandyopadhyay, TEMP/E-1/52614/2022-KOL, Ref. No. 202231046148, Date of filing 12th August 2022; Publication Date: due.



Real-time glycemic index sensor comprising enzymatic biosynthesized gold nanocomposite, Prathu Raja Parmar, Saurabh Dubey, and Dipankar Bandyopadhyay, TEMP/E-1/36319/2023-KOL, Ref. No. 202331031908, Date of filing 4th May 2023; Publication: due.



Nanoserpent scaffolds for high-precision and selective biosensing, Prathu Raja Parmar, Nafisa Arfa and Dipankar Bandyopadhyay, TEMP/E-1/88233/2023-KOL, Ref. No. 202331074836, Date of filing 2nd November 2023; Publication: due.



Selected Recent Publications



- ✦ Rewritable and liquid specific recognizable wettability pattern, M Dhar, D Sarkar, A Das, S K A Rahaman, D Ghosh, U Manna, Nature Communications 15 (1), 5838, 2024
- ✦ Sulphur-atom positional engineering in perylenimide: structure–property relationships and H-aggregation directed type-I photodynamic therapy, MN Khatun, S Nandy, H Roy, SS Ghosh, S Kumar, PK Iyer, Chemical Science, 2024.
- ✦ Microfluidic human physiomimetic liver model as a screening platform for drug induced liver injury, S Dey, A Bhat, G Janani, V Shandilya, R Gupta, BB Mandal, Biomaterials 310, 122627, 2024.
- ✦ Injectable Self-Oxygenating Cardio-Protective and Tissue Adhesive Silk-Based Hydrogel for Alleviating Ischemia After Mi Injury, S Hassan, Z Rezaei, E Luna, D Yilmaz-Aykut, MC Lee, AM Perea, Small, 2312261, 2024.
- ✦ 3D Bioprinted Human Skin Model Recapitulating Native-Like Tissue Maturation and Immunocompetence as an Advanced Platform for Skin Sensitization Assessment, B Bhar, E Das, K Manikumar, BB Mandal, Advanced Healthcare Materials 13 (15), 2303312, 2024.
- ✦ Highly efficient color-tunable organic co-crystals unveiling polymorphism, isomerism, delayed fluorescence for optical waveguides and cell-imaging, D Barman, M Annadhasan, AP Bidkar, P Rajamalli, D Barman, SS Ghosh, Nature communications 14 (1), 6648, 2023.
- ✦ Self-organized Synthesis of Nano-Serpent-Cluster on Templated Starch for Sensitive Detection of Pancreatic α -Amylase, N Arfa, PR Parmar, D Bandyopadhyay, ACS Sustainable Chemistry and Engineering, 2024,
- ✦ Realtime Monitoring of Glycemic Starch using Biosynthesized Gold Nanoparticle-Amylase Composites, PR Parmar, J Mahanta, S Dubey, TK Mandal, D Bandyopadhyay, ACS Sustainable Chemistry & Engineering, 2023
- ✦ Induced surface process of graphene variants' dispersion with biocompatible riboflavin. Kotal, A., Jana, K., Roy, S., Satpathy, J.K., Kar, R.K.# Colloids and Surfaces A: Physicochemical and Engineering Aspects (2024) 135029.
- ✦ Neuroinflammatory Mechanism Pain in Breast Cancer and Diabetes, S Sensharma, N Thakuria, S Pramanik, Diabetes and Breast Cancer: An Analysis of Signaling Pathways, 11, 2024





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