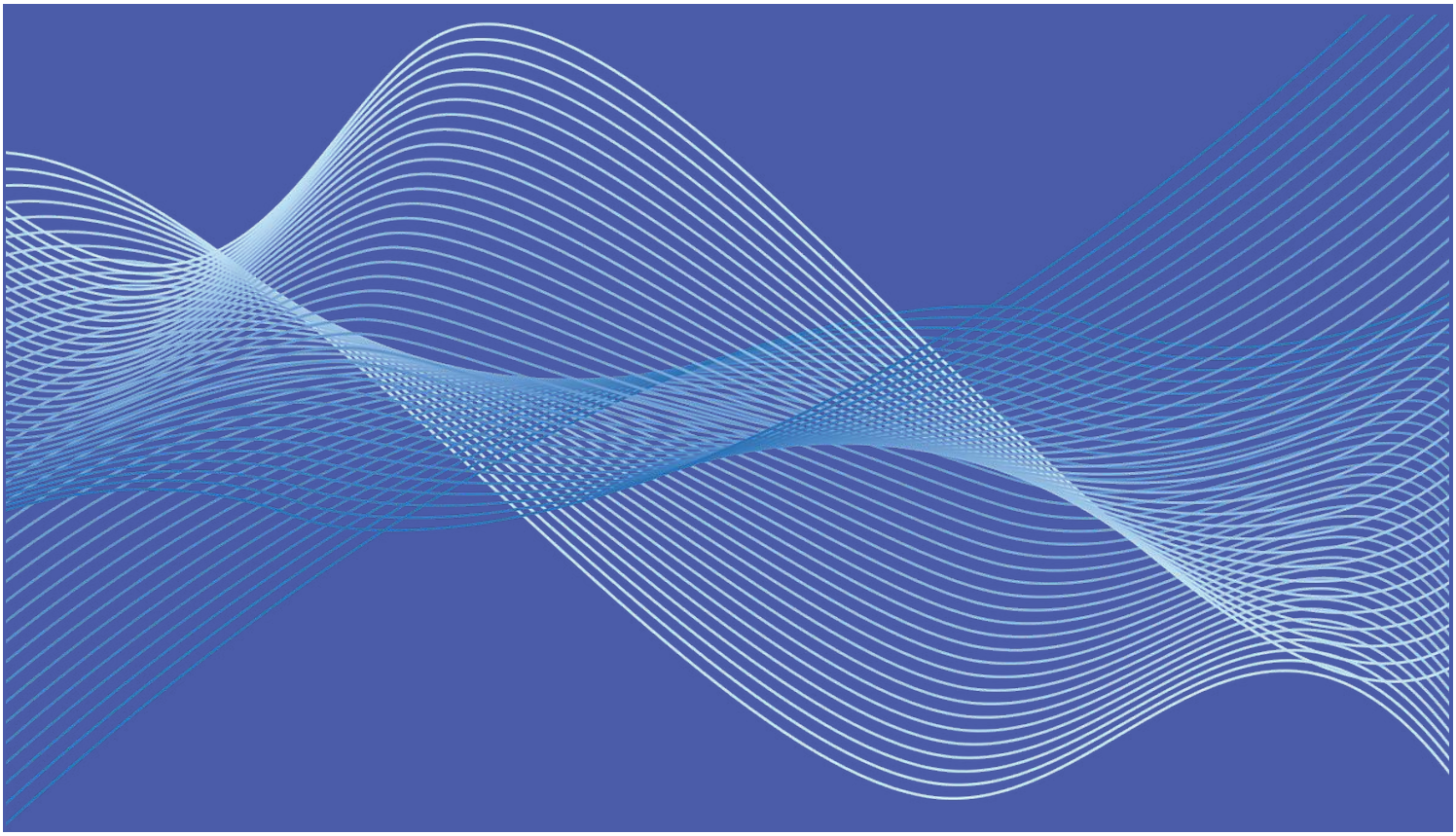


ICMR INDIAN COUNCIL OF MEDICAL RESEARCH
Serving the nation since 1911

MDMS MEDICAL DEVICE & DIAGNOSTICS MISSION SECRETARIAT, ICMR
Nurturing Medtech Ecosystem

Department of Health Research
Ministry of Health & Family Welfare
Government of India

Welcome to MCC MEDICAL COBOTICS CENTRE

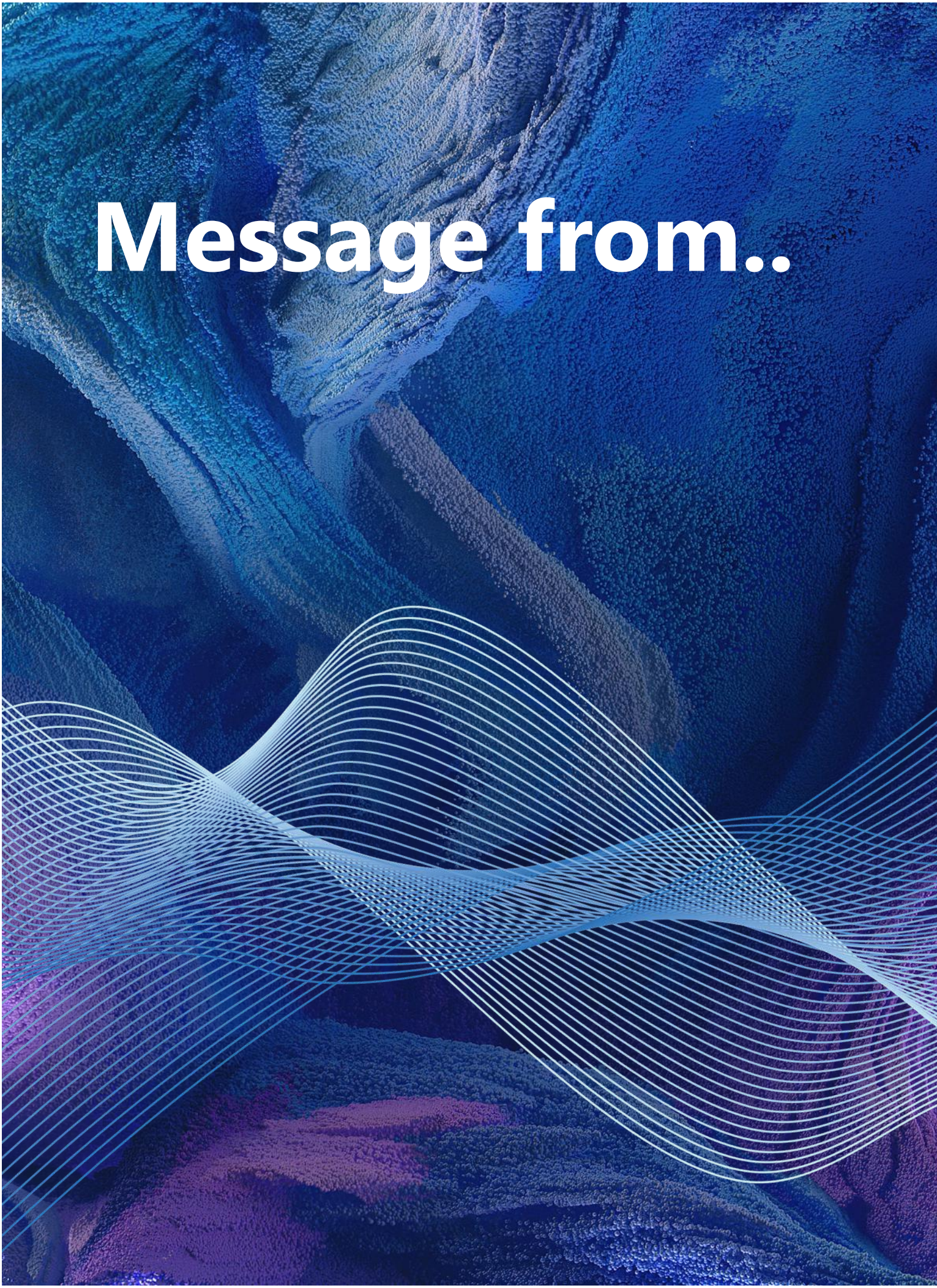
iit delhi

mpragati

MedTech Product Development
and Acceleration Gateway of India

Information Brochure

ICMR-DHR mPRAGATI at IIT Delhi


Message from..

Secretary DHR and Director General, ICMR

"India is seeing an epidemiological transition with rapidly changing public health scenario. Emergence of new infectious diseases coupled with life-style induced non-communicable diseases has put an immense burden on healthcare infrastructure. The Government of India is committed to extend these healthcare services to its population as part of India's commitment to Sustainable Development Goals (SDGs) for ensuring Universal Health Coverage (UHC). ICMR has always been at the forefront for promoting biomedical research in India for public health benefit. A National Platform for Medical Device Translation-mPRAGATI is an important endeavour in this direction under Pradhan Mantri's-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM). ICMR has entrusted IIT Delhi and its clinical partners to empower MedTech ecosystem to mitigate the existing challenges and preparedness for future pandemics."

Dr. Rajiv Bahl,
Secretary DHR and Director General, ICMR

Director, IIT Delhi

"We are delighted to partner with ICMR to create mPRAGATI, a National Centre for Medical Device Translation. We believe this provides an opportunity to transform the indigenous medical device industry and make it globally compatible. At IIT Delhi, we have a large number of collaborative research projects with Healthcare Industry from implantable to diagnostic devices. We are excited about our new Healthcare Campus in Jhajjar that will collaborate with the National Cancer Institute. Through mPRAGATI, we hope to create a natural and vibrant medical devices ecosystem and catalyse new innovations and products to become a national hub for medical device manufacturing."

Prof. Rangan Banerjee,
Director, IIT Delhi

Message from Dean R&D, IIT Delhi

"mPRAGATI stands as a testament to IIT Delhi's collaborative spirit of solving medical problems by an interdisciplinary team of engineers and doctors from All India Institute of Medical Sciences, Jamia Hamdard and other Medical Institutes across the National Capital. MedTech start-ups, innovators, engineers, medical experts, and regulatory bodies have converged with mPRAGATI in a synergistic ecosystem. The state-of-the-art infrastructure, ISO-certified laboratories with expert guidance of ICMR empowers mPRAGATI to navigate the complex path of medical device product development towards clinical trials and market reach. From proof-of-concept prototypes to commercially viable products, mPRAGATI offers a comprehensive spectrum of support."

Prof. Naresh Bhatnagar
Dean R&D, IIT Delhi

Message from Head, Development Research, ICMR

"mPRAGATI serves as a launchpad where early-stage technology from ideas to commercialization can pave a way to pre-clinical and clinical evaluation through pilot batch manufacturing and development of prototype. The National center's state-of-the-art infrastructure, coupled with the expertise of faculty and students at IIT Delhi along with doctors and regulatory specialists, creates a nurturing environment for MedTech start-ups. India's foremost academic institutions IIT Delhi and AIIMS and other research Institutions have a strong ecosystem of knowledge and support that can accelerate the product translation."

Dr. Taruna Madan Gupta
Sc. G and Head, Development Division, ICMR

Message from Head, Medical Devices and Diagnostics Mission Secretariat, ICMR

"With the rise in globalization trend and the clarion call of the Government of India to foster 'Make in India' in the Medical device and diagnostic sector for an envisaged Atmanirbhar Bharat, the need of State-of-the-Art facility was strongly felt to support the Indian industry for testing & ISO certified pilot batch manufacturing, while complying to the national and international quality standards. Considering this urgent need of the MedTech Sector, ICMR under its Medical Device and Diagnostics Mission Secretariat (MDMS) initiated mPRAGATI (Med-tech product Development and Acceleration Gateway of India) at IIT Delhi under the prestigious Govt. scheme PM- Ayushman Bharat Health Infrastructure Mission (PM- ABHIM), as a flagship initiative for fostering infrastructure development & strengthening the medical device & diagnostics sector for epidemiological diseases. It is heartening to note that with ICMR's support, mPRAGATI has transformed itself into a premier MedTech National translational center and it is catalyzing medical device innovation for public health impact." -

Dr. Suchita Markan
Sc. E and Head, MDMS, ICMR

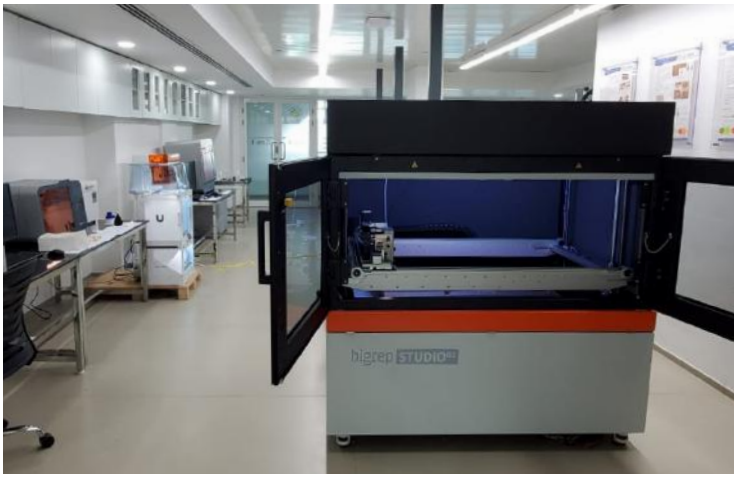
Content

1 INTRODUCTION

Introduction

MedTech Product Development Acceleration Gateway of India (mPRAGATI) is a National Centre for translation of MedTech products established by Indian Council of Medical Research (ICMR) and Department of Health Research (DHR). mPRAGATI is one of the key facilities under Pradhan Mantri-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM) monitored by NITI-Aayog (Nidhi Prayas) and World Bank. mPRAGATI works in a hub-and-spoke model with ICMR's Centers for Excellence established at 6 other IITs: Bombay, Madras, Kanpur, Kharagpur, Guwahati and Hyderabad and other ICMR supported initiatives in the MedTech sector.

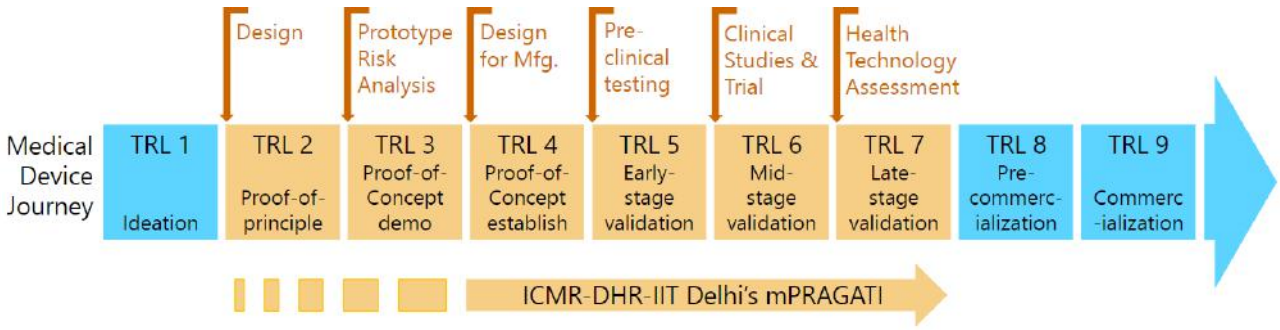
The National Centre is being developed under the able guidance of Prof. Dinesh Kalyanasundaram (Principal Investigator) and Prof. Ravikrishnan Elangovan, (Co-Principal Investigator). Prof. Dinesh is associated with the Centre for Biomedical Engineering (CBME) of IIT Delhi which has provided instrumental support and guidance to mPRAGATI. The Centre for Bio-Medical Engineering (CBME) was established in 1971 as a joint venture between IIT Delhi and All India Institute of Medical Sciences (AIIMS), Delhi with an emphasis mainly on cutting-edge research in Cancer Immunotherapy, Tissue Engineering, Clinical Diagnostics & Biosensors, Drug Delivery Systems, Medical Diagnostic Devices & instrumentation, Biomaterials & Biopolymers, Rehabilitation Engineering, Biomechanics, Orthodontics, Nanobiotechnology, etc.

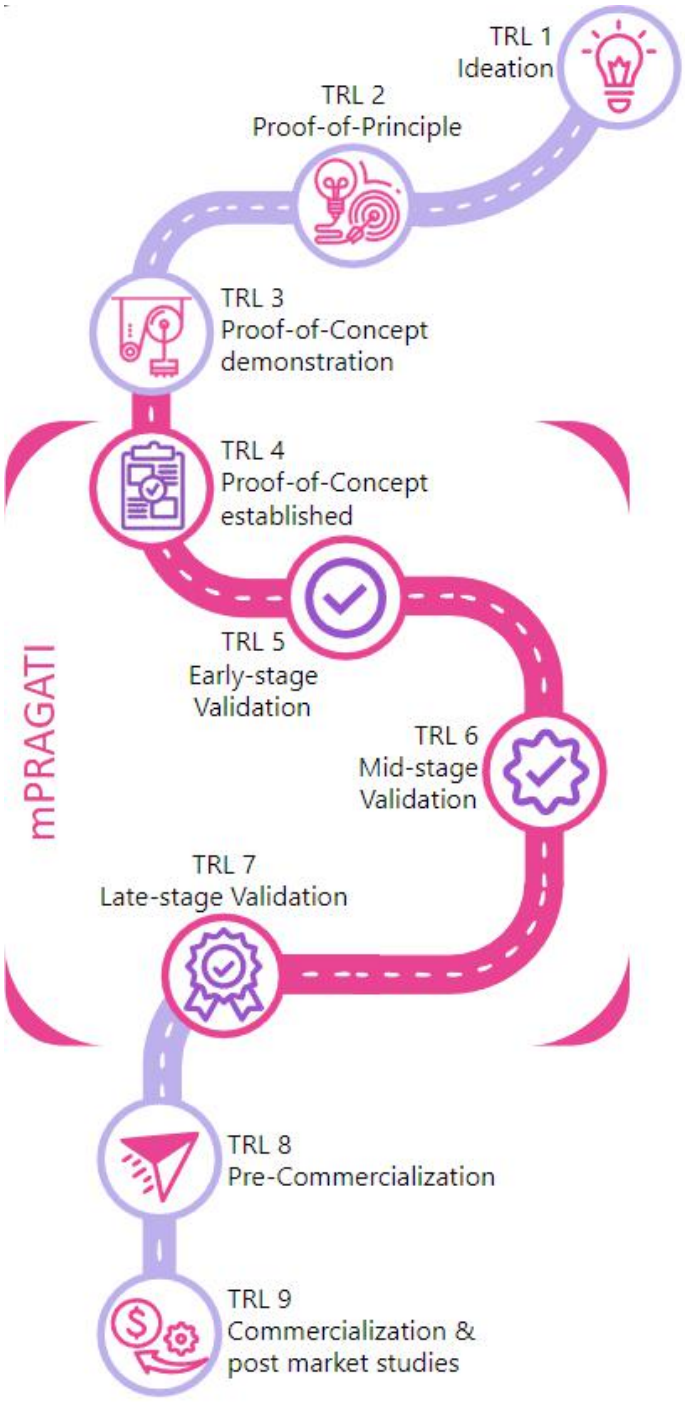


The main deliverables of mPRAGATI:

- Develop and translate medical technologies
- Establish state-of-the-art NABL and CDSCO-approved ISO 17025 Medical Device Testing Laboratory
- Set up an ISO 13485 Quality Management System compliant batch manufacturing
- Develop skills of personnel in academia and industries

MedTech Product Development





Mentoring of Start-ups

- Product Development
- Need Assessment
- ISO/CE Certification

ISO 17025 Testing

- MedTech testing
- Bio-compatibility
- Certification Consultation

ISO Fabrication

- Additive Manufacturing
- CNC Machining
- Injection Molding
- Coating facility
- Bio-fabrication facility
- PCB Design and Fab.

Manpower Training

- Medical Product Design
- Additive Manufacturing
- Industry 5.0

Regulatory Compliance

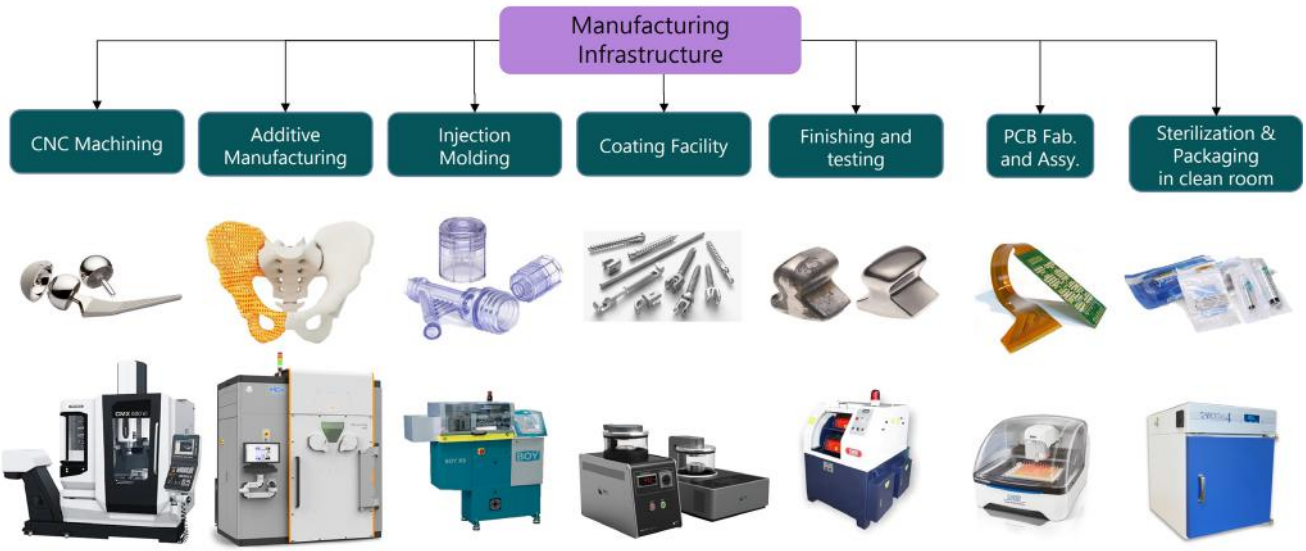
- Scientific Data Collation
- Liaison with Regulators
- Information Management

The development of medical technologies includes both implantable as well as non-implantable medical devices like orthopaedic implants (Hip Replacement System, Knee Replacement System, Shoulder Replacement System, Spinal implants, Elbow Replacement System, etc.), Ocular implants, vascular implants (catheters, cardiovascular stents, neurovascular stents, tubings, etc.), Hearing screening device, LAMP assay for pathogen diagnosis, Cervical cancer diagnosis, etc.

These medical devices were developed in collaboration with top clinicians from renowned institutes like AIIMS Delhi, IISc Bengaluru, CSIR-CSIO Chandigarh, KGMU Lucknow, MAMC Delhi, and RCB Faridabad. The goal is to advance MedTech products from early stages (TRL 3-4) to more developed stages (TRL 7-8). At mPRAGATI, our diverse team spans Engineering (Mechanical, Electronics, Mechatronics, etc.), Pharmaceutical Sciences, and General Sciences. We provide Design for Manufacturing (DFM), Prototyping, Testing, Certification, and Regulatory Assistance. Our services are available to academia, research institutes, and the MedTech industry, including established companies and startups.

Focus Areas

Fabrication and Manufacturing



The Centre is working in close conjunction with National Bodies and Regulators including Central Drugs Standards and Control Organization (CDSCO), Bureau of Indian Standards (BIS), National Accreditation Board for Laboratories (NABL), and Indian Council of Medical Research (ICMR). In the conduct of this vital work, as in all its efforts, mPRAGATI is committed to performance excellence that will help it to become a global leader in the field of development and testing of medical devices. This goal will be achieved at an accelerated pace with the help of the mPRAGATI staff's commitment to their duty and their excellence at every level of the facility.

TECHNOLOGIES 2

18 medical devices are currently under development at mPRAGATI, approved by ICMR's Technical Advisory Committee in line with National Health Mission.

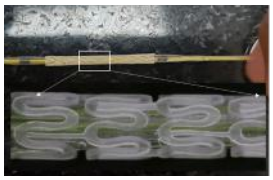
BVS: Bioresorbable Cardiovascular Stent

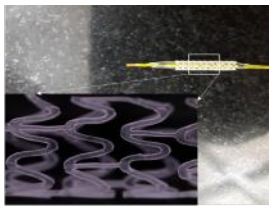
Prof. Naresh Bhatnagar (IITD)
Prof. Priya Vashisth (IITD)
Prof. Abhay Karandikar (IITK)
Dr. Rajiv Narang (AIIMS)

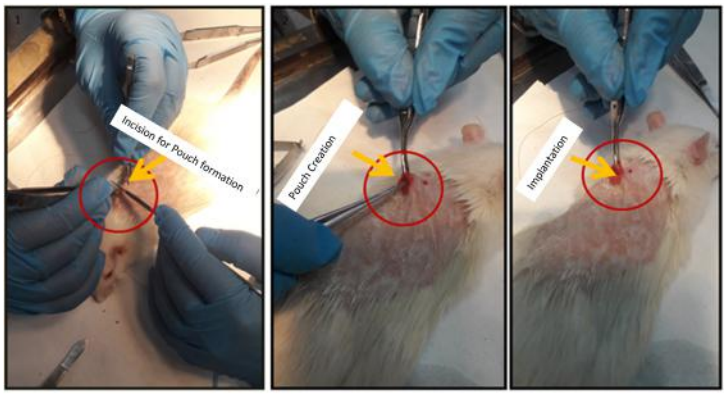
Current Status: TRL 5
Risk Class: Class D

Description of the product:

Bioresorbable composite stent is a minimally invasive medical device used to open and widen clogged arteries and then dissolves or is absorbed by the body. It is made from a composite material that combines a biocompatible polymer with a metal reinforcement.







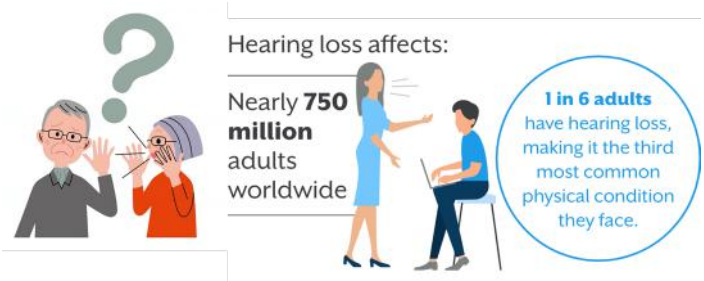
HearIT: Hearing Screening Device

Prof. Dinesh Kalyanasundaram (IITD)
Dr. Kapil Sikka (AIIMS)
Dr. Amit Chirom Singh (AIIMS)

Current Status: TRL 6
Risk Class: Class B

Description of the product:

HearIT (Hearing Screening Device) is a novel, low-cost hearing screening device that can perform screening even in unavailability of sound-proof room.



Initial Clinical Evaluation

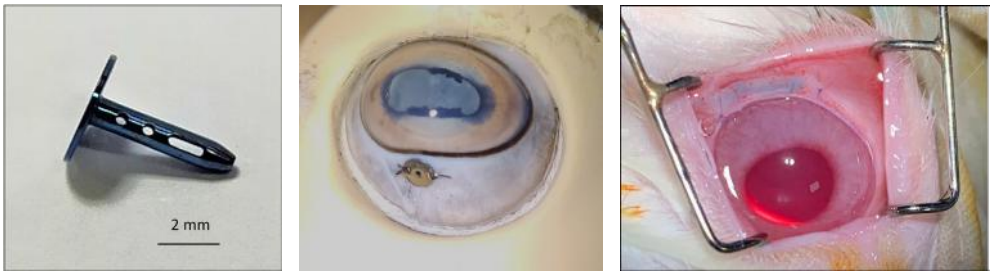
OcuPort: Ocular Drug Delivery Device

Prof. Dinesh Kalyanasundaram (IITD)
Prof. Jayanta Bhattacharyya (IITD)
Dr. Rohan Chawla (AIIMS)

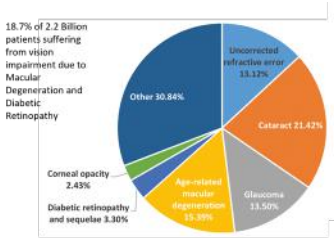
Current Status: TRL 6
Risk Class: Class C

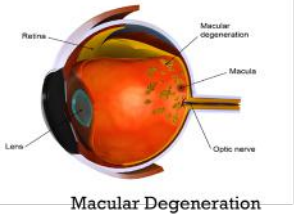
Description of the product:

Trans-scleral implantable device used to guide and facilitate intravitreal injections for conditions such as macular degeneration or diabetic macular edema.

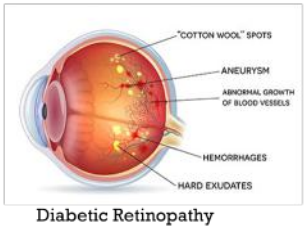


Implant Placed in rabbit's and Goat's Eye





Macular Degeneration



Diabetic Retinopathy

2.2 Billion Cases Globally | **0.2%** Mortality | **137.6 Million** Cases in India | **↑138%** Increase in last 30 Years

Genie-HPV: Molecular Assay

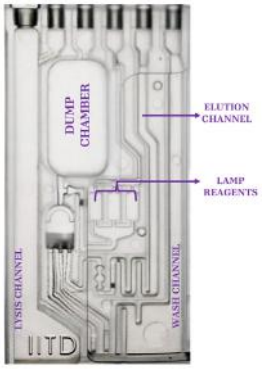
Prof. Ravikrishnan Elangovan (IITD)
Prof. Vivekanandan Perumal (IITD)
Dr. Sachin Kolte (Safdarjung Hospital)
Dr. Saritha Shamsunder (Safdarjung Hospital)

Current Status: TRL 4
Risk Class: Class C

Description of the product:

Genie HPV revolutionizes HPV detection with an integrated nucleic acid extraction and isothermal amplification system in a user-friendly microfluidic cartridge. The custom-designed cartridge streamlines the process, ensuring efficiency and accuracy through automated nucleic acid extraction, eliminating the need for external equipment. Genie utilizes Loop-Mediated Isothermal Amplification (LAMP) for rapid and robust HPV detection.

Genie-HPV



WoUnder Patch: Patch for Diabetic Ulcers

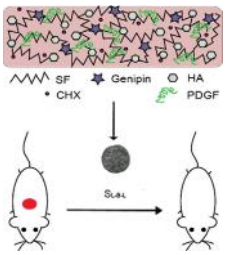
Prof. Jayanta Bhattacharyya (IITD)
Prof. Veena Koul (IITD)
Dr. Shivangi Saha (AIIMS)

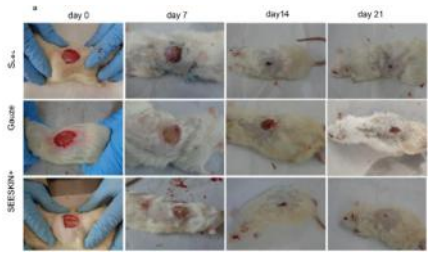
Current Status: TRL 6
Risk Class: Class C

Description of the product:

A layer-by-layer hydrogel scaffold of Silk fibroin (SF)-hyauronic acid (HA) loaded with Chlorhexidine (CHX) and Platelet derived growth factor-B subtype (PDGF-BB) to be used as dressing for chronic wounds.

WoUnder Patch





WoUnder Patch Used in Diabetic Model in Rats

BioMACROMOLECULES

pubs.acs.org/Biomac Article

Fabrication of *In Situ* Layered Hydrogel Scaffold for the Co-delivery of PGDF-BB/Chlorhexidine to Regulate Proinflammatory Cytokines, Growth Factors, and MMP-9 in a Diabetic Skin Defect Albino Rat Model

Ahana Banerjee, Veena Koul, and Jayanta Bhattacharyya*

Autoscope: Cervical Cancer Diagnosis

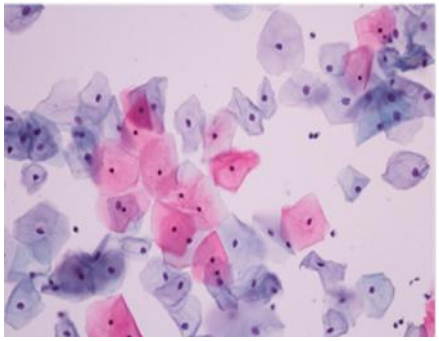
Prof. Ravikrishnan Elangovan (IITD)
Prof. Jayadeva (IITD)
Dr. Sachin Kolte
(Safdarjung Hospital)
Dr. Saritha Shamsunder
(Safdarjung Hospital)

Current Status: TRL 6
Risk Class: Class C

Description of the product:

Automated whole slide scanner which offers a transformative solution to address these challenges through its advanced capabilities in slide scanning, onboard computational anal sis, and integration with artificial intelligence/machine learning (AI/ML) algorithms for cervical cancer screening.

Autoscope



Initial Clinical Evaluation

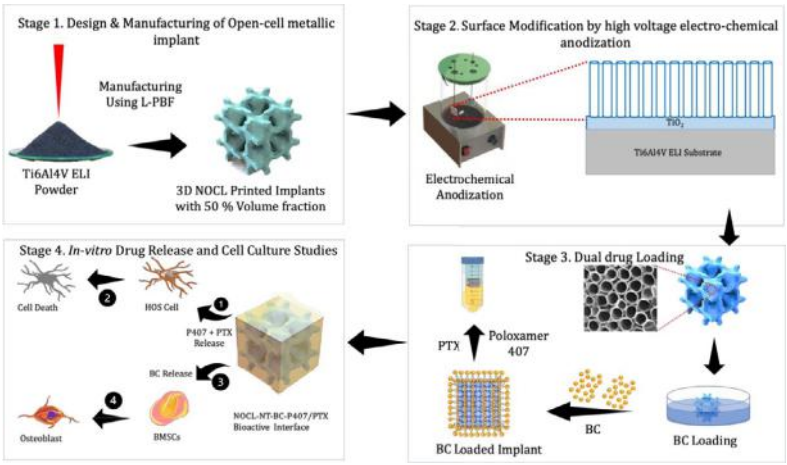
SµRe Scaff: Drug-Eluting Scaffold

Prof. Dinesh Kalyanasundaram (IITD)
Dr. Venkatesan Sampath Kumar (AIIMS)

Current Status: TRL 4
Risk Class: Class D

Description of the product:

The Ti6Al4V is 10X stiffer than bone, that leads to stress shielding and aseptic loosening. Further, oral delivery demands significantly large dosage of drugs. To address these twin challenges, we have fabricated open cell porous scaffolds capable of sustained dual drug delivery.



3D Printed SµRe Scaff Scaffolds

Materials & Design

Nanotextured and drug loaded Neovius Ti6Al4V ELI scaffolds with osteogenesis and anti-cancer potential

ACS Biomaterials

Orthopedic Scaffolds: Evaluation of Structural Strength and Permeability of Fluid Flow via an Open Cell Neovius Structure for Bone Tissue Engineering

Sonu Singh, Sunil Kumar Yadav, Vijay Kumar Meena, Priya Vashisth, and Dinesh Kalyanasundaram*

ElbowEase, ElbowFlex: Total Elbow Prosthesis

Prof. Dinesh Kalyanasundaram (IITD)
Dr. Nishank Mehta (AIIMS)
Dr. Shrijith (AIIMS)
Dr. Bhavuk Garg (AIIMS)

Current Status: TRL 4
Risk Class: Class D

Description of the product:

Total elbow replacement implant design aims to enhance longevity by addressing key concerns. It eliminates metal-to-metal contact, mitigates aseptic loosening, and accommodates a flexion-extension axis tilt of 14°.

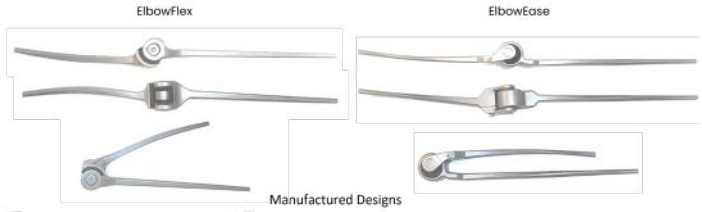
Implantation in Cadavers

Cadaveric Range of Motion Study

ElbowEase

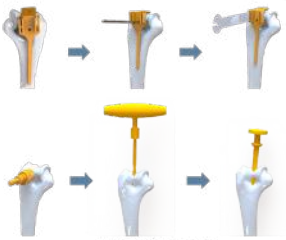
ElbowFlex

Design Process & evaluation of flexion-extension



Manufactured Designs

Surgical Tooling and Process



Humeral Preparation

Ulnar Preparation

FlexiScrew: Orthopaedic Screw

Prof. Dinesh Kalyanasundaram (IITD)
Dr. Vijay Kumar Sharma (AIIMS)

Current Status: TRL 5
Risk Class: Class C

Description of the product:
The Orthopedic screw has outer body is made up of polymeric bio-absorbable material poly-lactic acid (PLA) while there is a Titanium alloy (Ti6Al4V) rod inside to provide structural integrity. It minimizes stress shielding effect and also avoids removal of screws post healing. The screw is bioresorbable and has strength similar to cortical bone.

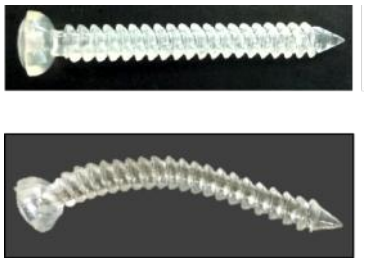
International Journal of Precision Engineering and Manufacturing (2023) 24:629–643
https://doi.org/10.1007/s12541-023-00775-x
Online ISSN 2005-4602
Print ISSN 2234-7593

REGULAR PAPER

Design of Polymeric Orthopedic Screws with Variable Stiffness and Multi-Objective Optimization of Injection Molding Process

Sunil Kumar Yadav[1] · Arnab Sikidar[1] · Dinesh Kalyanasundaram[1,2]

Received: 11 November 2022 / Revised: 20 January 2023 / Accepted: 30 January 2023 / Published online: 14 February 2023



FlexiScrew

Implantation in Cadaveric Bone

Implantation in Rat Femur

Indian Patent obtained on 15th January 2024 (#499461)

Upcoming Technologies:

Collaborators	Product	National Health Schemes	TRL Levels
Prof. Naveen K Singh	A screening device for the prediction of preterm birth	Child and Maternal Health	TRL3
Prof. Gagandeep Singh	Rapid Fungal Detection	One Health AMR Programme	TRL4
Prof. Satish Kumar Dubey	Cotinine Detection	National Tobacco Control Programme	TRL3
Prof. Satish Kumar Dubey	Chronic Kidney Disease Detection	Pradhan Mantri Jan Arogya Yojna	TRL4
Prof. Jayanta Bhattacharyya	Injectable hydrogel for glucose regulation and pancreatic regeneration simultaneously	National Program for Prevention & Management of Burn Injuries	TRL4
Prof. Priya Vashisth	Periodontal Gel	National Oral Health Programme	TRL5
Prof. Jay Dhariwal	Wireless Arthroscope	National Program for HealthCare of the Elderly	TRL3
Prof. Jay Dhariwal	Auto C-PAP	National Program on Prevention and Control of Diabetes, CVD, and Stroke	TRL3

3 INFRA

ISO 13485 Certified Manufacturing

Polymer and Metal Additive Manufacturing

- Fuse Deposition Modelling Printer (BigRep Studio G2 and Ultimaker S5 Pro Bundle)
- Digital Light Processing Printer (3D Systems Figure 4)
- Stereolithography Printer (Formlabs 3BL)
- Polyjet Printer (Stratasys Objet 30 Prime)
- Laser Powder Bed Fusion Printer (3D Systems DMP Flex 350)
- Wire Electric Discharge Machine (Electronica Smart F43)
- Die Sink - Electric Discharge Machine (Electronica Mint 5535Z)
- Retort Furnace (Nabertherm GmbH NR 40/11)
- Build-plate Polisher
- Sandblasting Machine








Ceramic Additive Manufacturing

- Ceramic Additive Manufacturing (3D Ceram)
- Polymer Burn-off furnace (Nabertherm GmbH)
- Sintering furnace (Nabertherm GmbH)

Injection Molding

- Plastic Injection Molding machine (Dr BOY 22 A PRO)
- Silicone Injection Molding machine (Dr BOY 25E SLR)

CNC Machining

- Sliding Head CNC machine (Tornos SA XT 26)
- 4 Axis CNC machining system (DMG Mori CMX 600 Vi)
- 7 Axis CNC machining system (DMG Mori NTX500)

Biocompatible Coating

- Magnetron Sputtering (HHV ATS 500)
- Atomic Layer Deposition CVD (HHV ALD 150)
- Magnetron Sputtering (SEC MCM-100P)

PCB Fabrication and Assembly

- Structuring, Cutting, Finishing and drilling (LPKF ProtoMat S104)
- Lamination (LPKF MultiPress S4)
- Through hole plating (LPKF Contac S4)
- Finishing (LPKF ProtoMask and ProLegend)
- Solder-paste dispensing and component placement (Fritsch PlaceALL 520)
- 3D Circuit printing (IDS NanoJet)
- Reflow soldering (EPS RF 300)



Bio-Fabrication

- Live cell printing (Advance Solutions Bioassembly Bot 500)
- Incubators (Eppendorf Cell Xpert C170)
- Deep Freezers
- Primary and secondary cell lines


Biomechanical Testing

- Fatigue testing (Instron UTM 25kN and ZwickRoell LTM 10kN)
- Static testing (Instron UTM 25kN and ZwickRoell LTM 10kN)

Characterization (Imaging)

- Micro Computed Tomography (Bruker Skyscan 1273) 130kV Source
- Skyscan 1273 Stages (Heating, Cooling, Tension & Compression)

Metrology

- Microhardness Tester (Innovatest Falcon 508)
- Tribotester (Rtec Instruments MFT 5000)
- Metallurgical Microscope (Dewinter DMI Ultima)
- Coordinate Measuring Machine (Zeiss O inspect 543)
- 3D Profilometer (Rtec UP 2000)





4 TRAINING

Workshops and Trainings

150+ personnel have been trained and certified for ISO 13485, ISO 17025, ISO 14971, measurement uncertainty under ISO 17025, and workshops on Medical Device Rules 2017.

2-Day Workshop on Medical Device Rules, 2017 (January 2024)

1-Day training on ISO 14971 for Risk Management of Medical Devices (October 2023)

2-Day training on ISO 13485 Quality Management System for Medical Devices (July 2023)

2-Day training on ISO 17025 for Testing Laboratories (March 2023)

2-Day Workshop on Medical Device Rules, 2017 (February 2023)

Visits and events

- Workshop on Medical Device Rules 2017
- Visit of DG ICMR on 22nd April 2023
- Visit of Deputy Drug Controller (India), Dr. Ravikant Sharma on 21st February 2023
- Visit of His Excellency Abdulla bin Touq Al Marri, Minister of Economy, UAE, on 25th May 2023
- Visit of Her Excellency Ms. Delcy Rodriguez, The Executive Vice President and Finance Minister of the Bolivarian Republic of Venezuela on 3rd August 2023
- ISO 17025 on 10th-11th March 2023
- ISO 13485 training on 17th-18th July 2023
- ISO 14971 training on Medical Device Risk Management on 5th October 2023

5 TESTIMONIALs

From Start-ups

25+ startups have used various facilities offered by mPRAGATI post signing the NDA and MoU as per the requirements.

"We have developed a unique capability to delivery medical supplies through drones in very remote areas in India. mPRAGATI helped us in manufacturing and testing drone components that were critical to our overall operation. Through mPRAGATI, we could save weight and increase reliability."-

Sudhanshu Mishra
Director, TSAW Drones

" We had the pleasure of working with mPRAGATI Lab at IIT Delhi, and we must say that we were thoroughly impressed with their professionalism, expertise, and commitment to quality. The team at mPRAGATI Lab is highly skilled and knowledgeable. Their state-of-the-art Centre is equipped with the latest technology, and they maintain the highest standards of quality and safety. "-

MD Saif Ali
Director, EnthuDes

"We required flexible parts for our flagship therapeutic device for mental health treatment. We required flexible parts and that too in tight tolerance. mPRAGATI helped us in design validation for 3D printing and supplying parts in time."-

Lakshay Sahni
Co-Founder, Marbles

"We are developing an active prosthetic hand. After using mPRAGATI services, we were able to manufacture components in precise dimensions and our time to market is greatly reduced."-

Munish Kumar
Founder & CEO, Exobot Dynamics

"Getting our PCBs done with mPRAGATI was a fantastic experience! They delivered quality boards within a tight timeline, and we really appreciated how responsive and easy to work with their team was. The staff's attentiveness made the whole process smooth and enjoyable. mPRAGATI is definitely a go-to for quick and quality PCB service!" -

Ashutosh Patra
CTO, Cofounder, Neuranics

"It was a terrific experience working with mPRAGATI on our PCBs! They supplied boards on schedule, and we liked how responsive and simple to deal with their team is."-

Sumit Roy
Founder, Six Sense Mobility

Faculty Members from Medical Institutions

17 faculty members from CBME, KSBS, DBEB, Mechanical engineering, Design, and Electrical engineering are engaged in developing products as well as regular users of facilities at mPRAGATI

"mPRAGATI's partners with academic institutions, research bodies, and industry leaders to create an ecosystem of knowledge and support. They continuously improve their services, offering expert guidance, cutting-edge infrastructure, and streamlined regulatory expertise to accelerate MedTech products."-

Prof. Dr. Vijay Sharma
Trauma Center, Orthopedics, AIIMS Delhi

"We're thrilled to team up with mPragati IIT Delhi to advance a range of in-vitro diagnostics technologies and medical devices. Leveraging mPragati's state-of-the-art manufacturing and testing facility will facilitate the creation of cutting-edge medical devices. It's a privilege to join forces and make meaningful contributions in this vital sector."-

Prof Deepthi Nair
HOD, Dept of Microbiology, VMMC-Safdarjung Hospital

"mPRAGATI, a cutting-edge platform, streamlines data integration and collaboration, propelling my spine surgery research with precision and efficiency, paving the way for transformative breakthroughs. Looking forward to Harness its power to elevate and redefine possibilities in spinal healthcare."-

Prof. Dr. Bhavuk Garg
Orthopedics, AIIMS Delhi

"mPRAGATI presents a brilliant forum for doctor engineer interface. This is definitely an establishment which can transform great ideas to great realities. Already on work for some innovations on hearing screening devices and Neuro monitoring, I look forward to mPRAGATI collaborations for much much more!!"-

Prof. Dr. Kapil Sikka
ENT, AIIMS Delhi

"From bench to bedside, from Lab to Operating room, mPragati will facilitate clinical trials and adoption of innovative indigenous medical devices."-

Prof. Dr. Rohan Chawla
Ophthalmology, AIIMS Delhi

Faculty Members from Other Institutions

"One stop for fabricating biomedical components from sizes of micron to meter." -

Prof. M. Manivannan
Dept. of. Applied Mechanics, IIT Madras

"mPRAGATI is an excellent initiative that harmonizes the biomedical research sector in India. This holistic approach provides our research group at CBCMT - VIT with an integrated solution for their diverse requirements by bringing together medical device testing, additive manufacturing, and other biofabrication needs under a single roof."-

Prof. Geetha Manivasagam
Director, CBCMT- VIT

"mPRAGATI is a unique, forward looking platform for medical device development. It ticks all the desired boxes and allows us to collaborate for innovations in a better way."-

Dr. Akshat Malik
Oncology, Max Delhi

"High quality medical equipment is an absolute necessity in the provision of good healthcare services. Presently, around 70% of all medical devices in India are imported. Therefore, there is a need for development of good quality affordable indigenous medical equipment and mPRAGATI is the solution to such issues."-

Prof. Dr. Chirom Amit Singh
ENT, AIIMS Delhi

"mPRAGATI's dynamic collaboration with academia, industry, and regulatory bodies fuels transformative MedTech advancements. I commend its seamless integration of medical and engineering expertise, propelling innovation from bench to bedside. Excited for ongoing and future collaborations to redefine possibilities in healthcare."-

Dr. Sahil Agarwal
Ophthalmology , AIIMS Delhi

IIT Delhi Faculty Investigators and Users

"A national Centre for Prototype to industry ready medical devices in neuro rehabilitation and mental health"-

Prof. Deepak Joshi
Biomedical Engineering, IIT Delhi

"mPRAGATI is a platform for manufacturing and testing a vide range of biomedical devices. Clinical trials of various novel technologies with proof of concept are also supported to help speed up their entry into the market for benefitting mankind."-

Prof. Jayanta Bhattacharyya
Biomedical Engineering, IIT Delhi

"mPRAGATI is a well-equipped Centre to realize your ideated product, from design validation to manufacturing and testing as per the ISO standards. I am pleased to be associated with mPRAGATI. It's a place where you can find state-of-the-art facilities in one place, regular training workshops, and continuous mentorship from the best in the respective sectors."-

Prof. Priya Vashisth
Biomedical Engineering, IIT Delhi

"mPRAGATI helps to transform research (or ideas) into actionable products and processes"-

Prof. Sabyasachi Paldas
Design, IIT Delhi

"mPRAGATI bridges between the promise of medical devices and their real-world impact on patients. They provide the rigorous scientific evidence needed to demonstrate the safety and efficacy of medical technologies, paving the way for regulatory approval and widespread adoption."-

Prof. Gourab Kar
Design, IIT Delhi

"mPRAGATI's additive manufacturing facility has proven to be unparalleled in its versatility, offering expertise in both polymer and metal-based AM. From crafting detailed wax jewelry to intricate lattices, I've experienced precise and accurate fabrication, thanks to their dedicated team and a wide range of 3D printers tailored to specific component requirements."-

Prof. Kusum Meena
Mechanical Engineering, IIT Delhi

"Innovate. Detect. Protect. mPRAGATI's cutting-edge research facilities amplify precision and reliability, propelling the evolution of groundbreaking biosensor technologies."-

Prof. Naveen Kumar Singh
Biomedical Engineering, IIT Delhi

mPRAGATI Working Committee

Prof. Ashwini Kumar Agrawal,
Chairperson
Department of Textile Technology
IIT Delhi

Prof. P.V.M. Rao,
Member
Dean, Alumni Relations
IIT Delhi

Dr. Suchita Markan,
Member
Sc. E and Head, MDMS, ICMR

Prof. Rajendra Singh,
Member
Associate Dean R&D
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About the Principal Investigators

Prof. Dinesh Kalyanasundaram is a faculty at the Centre for Biomedical Engineering. He is a mechanical engineer by training (Bachelors: College of Engineering, Guindy; Masters: IIT Delhi; PhD: Iowa State University; Post-doctoral research: University of Washington, Seattle; Biomedical consultant: L&T) and strongly believes in innovation and inter-disciplinary collaborative research as a means to achieve innovation. His research group is focused on designing medical devices, validating their clinical performance and developing associated manufacturing processes. He is involved in the development of both diagnostic devices and implantable devices. His group also works on tissue biomechanics and developing musculoskeletal models. The major research in the group includes developing devices for manufacturing processes and solving biomechanical problems. His areas of interest include micromachining of materials, product design, solid mechanics, DNA based diagnostics, lab-on-chip device design, orthopaedics, orthodontics, surface modification, and laser machining.

Prof. Dinesh Kalyanasundaram,
Principal Investigator, mPRAGATI
Biomedical Engineering, IIT Delhi

Prof. Ravikrishnan Elangovan is a faculty in the Department of Biochemical Engineering and Biotechnology, IIT Delhi since 2010. He is an undergraduate from IIT Delhi and completed his Ph.D. from the University of Florence, Italy. He is a biophysicist by training and is actively engaged in developing methods/technologies for visualizing biological systems. His research interests include single-molecule biophysics, Anti-microbial resistance, in vitro diagnostics and Bioentrepreneurship. Prof. Ravikrishnan and his team have developed multiple platform technologies for infectious disease diagnosis and assays. His research interests include Single Molecule Biophysics, fluorescence spectroscopes, molecular motors, and skeletal muscle mechanics.

Prof. Ravikrishnan Elangovan,
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