



**COMPENDIUM ON SDG 17**  
**PARTNERSHIP FOR THE GOALS**  
**2020-2021**



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## 1. INTRODUCTION

A successful sustainable development agenda requires partnerships between governments, the private sector and civil society. These 17 ambitious goals and the complex challenges they seek to address fit neither neatly demarcated sectors, nor national borders. Climate change is global, and businesses are just as important to fighting it as governments. Innovation can't happen without universities and scientists, and certainly not without exchange of knowledge across continents. Gender equality is as much about communities as it is about legal instruments. If our epidemics are global, their solutions are too. Inclusive partnerships built upon a shared vision and shared goals that place people and the planet at the centre, are needed at the global, regional, national, and local level.

The Government of India is an important part of this new global partnership, and it has been strengthened by the country's efforts to build networks within the region and with the world. South-South co-operation has been a crucial part of this, as is India's membership and leadership in institutions like the Shanghai Cooperation Organization, BRICS and its New Development Bank, and the South Asian Association for Regional Cooperation, as well as with UN agencies and programmes around the world.

Globalization has made the world more interconnected in terms of technology, knowledge sharing, sharing resources, man power, financial support, etc. Cooperative work is an important way to share ideas and nurture innovation. SDG 17 is important too achieve the rest of the 16 Sustainable goals partnerships in all dimension becomes more important by promoting inter-sectoral and international collaborations. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital for sustainable growth and development. Goal 17 Aims to mobilize additional financial resources for developing countries from multiple sources that assists developing countries to attain financial stability, that would create international co-operation on science technology, innovation and would provide opportunities for knowledge sharing. The goal also aims to help developing nations in capacity building, increase their export and enhance policy coherence for sustainable development.

Goal 17 strengthens the means to implement and revitalize the global partnership for sustainable development. The goal aims to enhance North-South and South-South cooperation by supporting national plans to achieve all the 16 sustainable development goals by promoting inter-sectoral and international collaborations. Today with globalization, the world is more interconnected than ever. Collaborative work is an important way to share ideas and foster innovation. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital for sustainable growth and development. Goal 17 is one of the most important goals in promoting equitable trade across borders. It aims at such collaborations that assists developing countries to attain financial stability, that would create international co-operation on science technology, innovation and would provide opportunities for knowledge sharing. The goal also aims to help developing nations in capacity building, increase their export, and enhance policy coherence for sustainable development.

The SDG-17 provides strong global partnerships and cooperation among the countries. A successful development agenda requires inclusive partnerships — at the global, regional, national, and local levels. The United Nations collaborate with creative agencies, the entertainment industry, media organizations and businesses who are committed to achieving the sustainable development goals. Strong international cooperation is needed now more than ever to ensure that countries have the means to recover from the pandemic, build back better and achieve the Sustainable Development Goal (SDG).

## 2. ROLE OF THE INSTITUTION TOWARDS SDG 17

The role of institute towards collaboration and partnership briefly:

- ✓ Encourage and promote the SDGs as a topic of research within the university
  - ✓ Support the full spectrum of research approaches needed to address the SDGs, including interdisciplinary and trans-disciplinary research
  - ✓ Support and incubate innovation for sustainable development solutions
  - ✓ Actively support national and local implementation of the SDGs
  - ✓ Advocate for national support and coordination of research on the SDGs
  - ✓ Support capacity building for developing countries to undertake and use research on the SDGs
- 
- ***Sustainability science*** – or more broadly research for sustainable development – a new branch of research which seeks to understand how interactions and emergent properties between natural, social and economic systems shape sustainable development challenges, and how to create transformations towards more sustainable outcomes.
  - ***Interdisciplinary and trans-disciplinary approaches*** that bring different disciplines, sectors, and types of knowledges (traditional, practitioner, expert, citizen, and so on) together to help illuminate all aspects of complex social, environmental, and economic challenges.
  - ***Co-design and co-production approaches***, which work closely with policy makers and users of knowledge from the start to define the problems, plan the research methodology, and carry out the research.
  - ***Inclusive approaches*** that recognize and engage with important groups – such as women, indigenous people, and diverse cultures, worldviews, and ideologies – and forms of knowledge – such as traditional knowledge – that are often under-represented in research.
  - ***Policy-relevant advice*** that uses existing knowledge and research to assist policy makers understand the implications of different policy options and design new policies.

### 3. COLLABORATIVE RESEARCH & TRAINING

Funding agency	Partnering institution/ Department	Collaborative Departments	Area of collaborative work/ Research
WHO World Health Organization	JSS Academy of Higher Education & Research	SEAR South East Asian Region Countries	Training Program on the concept and implementation of Hemovigilance for the Healthcare providers engaged in blood transfusion services in the SEAR Countries
WHO World Health Organization	JSS Academy of Higher Education & Research	SEAR South East Asian Region Countries	Training Series on Blood Components Separation and Plasma Fractionation
World Health Organization	JSS Academy of Higher Education & Research	SEAR South East Asian Region Countries	Training Series on Blood and Blood Products Regulations
WHO World Health Organization	JSS Academy of Higher Education & Research	SEAR South East Asian Region Countries	Regional Desk Review (Situational Analysis) of Regulations Overseeing Quality and Safety of Blood and Blood Products in Member States of Southeast Asia Region
WHO World Health Organization	JSS Academy of Higher Education & Research	SEAR South East Asian Region Countries	Working group on – Tools for Step Wise Implementation of Hemovigilance Systems globally
World Health Organization	JSS Academy of Higher Education & Research	Indian Pharmaceutical Alliance (IPA)	Pharmacovigilance
WHO World Health Organization	JSS Academy of Higher Education & Research- JSSAHER	Indian Ministry of Health, Department of Biotechnology (DBT), Indian Pharmaceutical Alliance (IPA)	Good Manufacturing Practices (cGMP) to support the Indian pharmaceutical / Medical Devices industries
WHO World Health Organization	JSS Academy of Higher Education & Research- JSSAHER	MTaPS, PQM+, BIRAC and AMTZ- USAID funded programs	Pharmaceutical Units in active pharmaceutical ingredients (API) and formulations for access to quality-assured medical products
Latrobe University, Melbourne, Australia	JSSAHER- JSS Medical College Dept. Microbiology Dr.M.N.Sumana	Com. Medicine	Microbial population in soil
Swedish Heart Lung Foundation,Sweden.	JSSAHER- JSS Medical College Dept. Respiratory Medicine Dr.P.A.Mahesh	Com. Medicine	COPD
Swedish	JSSAHER- JSS Medical College Dept. Respiratory Medicine	Com. Medicine	COPD

Karolinska Institute, Sweden.	Dr.P.A.Mahesh		
Latrobe University, Melbourne, Australia	JSSAHER- JSS Medical College Dept. Respiratory Medicine Dr.B.S.Jayaraj	Com. Medicine	Asthma & Air pollution
PHRI, Hamilton, Canada, & Cadila	JSSAHER- JSS Medical College Dr.K.M.Srinath Dept of Medicine	General Medicine Com. Medicine	The International Polycap study (TIPS -3)
IVIEW Therapeutics Inc, USA	JSSAHER- JSS Medical College Dr. Premnath Raman Dept. of Ophthalmology	Com. Medicine	Acute Adenoviral Conjunctivitis
Latrobe University, Melbourne, Australia	JSSAHER- JSS Medical College Dept. Microbiology Dr.M.N.Sumana	Com. Medicine	Microbial population in soil
International Research Partnership Fund	JSSAHER- JSS Pharmacy College Dr Saravana Babu Chidambaram & Ms. Mahalakshmi A. M	University of Saskatchewan, Canada	Breast cancer diagnosis and therapeutics, a novel approach
DBT Department of Biotechnology , Government of India	JSSAHER- JSS Medical College Dept O.B.G. Dr.Sujatha.M	Dept. Radiology	Radio Frequency ablation fibroids
DBT Department of Biotechnology , Government of India	JSSAHER- JSS Medical College Dept.Radiology Dr.Vikram Patil	Dept. OBG	RFA in fibroids
DBT Department of Biotechnology , Government of India	JSSAHER- JSS Medical College Dept. E.N.T. Dr.M.B.Bharathi	Dept. of Pharmaceutics, JSS College of Pharmacy	Nasal stunts
DBT Department of Biotechnology , Government of India	JSSAHER- JSS Medical College Dept.Respiratory Medicine Dr P A Mahesh	Dept. of Pharmaceutics, College of Pharmacy	Air Pollution
IADVL The Indian Association of Dermatologists	JSSAHER- JSS Medical College Dept.Dermatology Dr.Kanthraj G.R.	Dept.Anatomy	Tele Dermatology
RNTCP The National Tuberculosis Elimination Program is the Public Health initiative of the Government of India	JSSAHER- JSS Medical College Dept. Community Medicine Dr.Madhu B.	Dept.Dermatology	Tuberculosis
CSIR-IICB Council Of Scientific And Industrial Research–Indian Institute Of Chemical Biology	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Subbarao MVSST	Dept. Microbiology	Chronic Respiratory Disease

Centre for chronic disease control, New Delhi	JSSAHER- JSS Medical College Dept. Cardiology Dr Nagaraj Desai Adjunct Faculty	Dept. Physiology	Yoga based cardiac rehabilitation
MPMRT & Karnataka API	JSSAHER- JSS Medical College Dept. General Medicine Dr.Savitha	Dept. Comm. Medicine	Thyroid dysfunction and anemia
ICMR Indian Council of Medical Research, Govt. of India	JSSAHER- JSS Medical College Dept. Geriatric Medicine Dr.Pratibha Pereira	General Medicine Community Medicine Biochemistry	BCG vaccine
Bio E-limited	JSSAHER- JSS Medical College Dept. General Medicine Dr.H.R.PrasannaKumar	Community Medicine	Polio myelitis vaccine
Imperial college, London	JSSAHER- JSS Medical College Dept. Respiratory Medicine Dr.P.A.Mahesh	Biochemistry	COPD
Manchester University	JSSAHER- JSS Medical College Dept. Psychiatry Dr.Rajesh Raman	General Medicine	South Asia self-harm initiative
VGST Vision Group of Science and Technology	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Akila Prashant	Surgery, Pathology, JSS Ayurveda College	Colon Cancer
DST Department of Science & Technology, Government of India	JSSAHER- JSS Medical College Dept. Physiology Dr.Rajalakshmi R.	Biochemistry, Gen Medicine	Diabetes mellitus & Vitamin D
DST Department of Science & Technology, Government of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Rajesh Kumar Thimmaiah	General Medicine	Dyslipidemia
Fund for Improvement of S&T Infrastructure (FIST), Govt. of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.MVSST Subbarao	Community Medicine	FIST program
DST Department of Science & Technology, Government of India	JSSAHER- JSS Medical College Dept. Paediatrics Dr.Srinivasa Murthy	Biochemistry	POCT for Blood coagulation status
DBT Department of Biotechnology, Government of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Swetha N.K.	Cardiology, General Medicine	Risk of Diabetes mellitus
DST Department of Science & Technology	JSSAHER- JSS Medical College B Dept. Biochemistry Dr.MVSST Subbarao	Community Medicine	Vitamin D & CA Breast
DST Department of Science & Technology	JSSAHER- JSS Medical College Dept. Respiratory Medicine Dr.P.A.Mahesh	Biochemistry	Air pollution
DBT Department of Biotechnology, Government of India	JSSAHER- JSS Medical College Biochemistry Dr.Divya P.Kumar	Community Medicine	Hepatocellular Carcinoma

DST Department of Science & Technology, Government of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Prasanna Kumar	Community Medicine	Hepatocellular Carcinoma
IADVL Research Grants	Dept. Dermatology Dr.Ranugha P.S.S.	Microbiology	Leprosy
SERB Science and Engineering Research Board,Govt.of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Akila Prashant (Dr.P.V.Salimath)	Medicine Comm. Medicine	Diabetic Nephropathy & Vitamin D
Bhramara Trust	JSSAHER- JSS Medical College Dept. Anatomy Dr.N.M.Shamasundar	Community Medicine	Plastination
RNTCP The Revised National TB Control Program,Govt.of India	JSSAHER- JSS Medical College Dept. Microbiology Dr.Teashree A.	Respiratory Medicine	Tuberculosis
RNTCP The Revised National TB Control Program	JSSAHER- JSS Medical College Dept. Comm. Medicine Dr.Madhu B.	Respiratory Medicine	Tuberculosis
CSIR IICB Council of Scientific and Industrial Research, Gov.of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.MVSST Subbarao	--	Chronic Respiratory disease
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.M.N.Suma	OBG Pathology	Cervical Cancer
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Anatomy Dr.Deepa Bhat	Biochemistry Comm. Medicine Paediatrics	Sickle Cell Disease
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Biochemistry Dr.Akila Prashant	Paediatrics	inherited metabolic disorders
ICMR Indian Council of Medical Research,Govt.of India	Dept. Biochemistry Dr.Divya P.Kumar	Gastroenterology	Hepato Cellular Carcinoma
Christian Medical College, Vellore,India	JSSAHER- JSS Medical College Dept. Paediatrics Dr.Rajani H.S.	Multi Centric Study (Kerala, Maharashtra, Gujarat)	Rotasiil Vaccine
CSIR Council of Scientific and Industrial Research	JSSAHER- JSS Medical College Dept. Paediatrics Dr.Rajani H.S.	Multi Centric Study (Kerala, Maharashtra, Gujarat)	Rotasiil Vaccine
IADVL Indian Association of Dermatologists Venereologist & Leprologists	JSSAHER- JSS Medical College Dept. Dermatology Dr.Vinutha Rangappa	Biochemistry	Vitiligo
CSIR	JSSAHER- JSS Medical College Dept. Dermatology	Com. Medicine	Oral Lichen Planus



Council of Scientific and Industrial Research, Gov.of India	Dr.Ashwini P.K.		
NACO The National Aids Control Organization Gov.of India	JSSAHER- JSS Medical College Dept. Microbiology Dr.Sumana.M.N	Com. Medicine	Viral Load Laboratory
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Microbiology Dr.Sumana M.N.	Com. Medicine	State Reference Laboratory
NTEP National Tuberculosis Elimination Program Gov.of India	JSSAHER- JSS Medical College Dept. Microbiology Dr.Teashree A.	Respiratory Medicine and Intermediate Reference Laboratory	Mycobacterium tuberculosis
Dr Somashekar and Malathi Health and Wellness Foundation	JSSAHER- JSS Medical College Dept. Comm. Medicine Dr.Praveen Kulkarni	General Medicine	Health Awareness Project for rural areas in North Karnataka
iMERA	JSSAHER- JSS Medical College Dept. Radiology Dr.Vikram Patil	Com. Medicine	MSK Radiographs
WHO World Health Organization	JSSAHER- JSS Medical College Dept. Paediatrics Dr.M.D.Ravi	GVC-MCC-WHO	COPD
ICMR (NIRT) Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Comm. Medicine Dr.Praveen Kulkarni	A Phase 2/3, observer-blind, Randomized, controlled study to determine the safety and immunogenicity of COVISHIELD (COVID-19 vaccine) in Healthy Indian Adults	
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Geriatrics Dr.Prathibha Periara	Study to evaluate the effectiveness of BCG vaccine in reducing Morbidity and Mortality in Elderly individuals in COVID-19 Hotspots in India	
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Com. Medicine Dr.Anil S.Bilimale	Effectiveness of Covaxin and Covishield vaccines against severe COVID-19 in India, 2021: Multi-centric hospital-based case control study	
Biotechnology Industry Research Assistance Council (BIRAC)	JSSAHER- JSS Medical College Dept. Medicine Dr.H.Basavana Gowdappa	Capacity building of Infrastructure and human resource for conducting COVID Vaccine clinical trials and immunogenicity studies as per GCP guidelines.	
ICMR Indian Council of Medical Research,Govt.of India	JSSAHER- JSS Medical College Dept. Comm. Medicine Dr.Praveen Kulkarni	A phase 2/3, observer-blind, randomized, controlled study to determine the safety and immunogenicity of covovax [sars-cov-2 recombinant spike protein nanoparticle vaccine (sars-cov-2 rs) with matrix-m1™ adjuvant] in Indian adults	
Reddy's Laboratory, Hyderabad,India	JSSAHER- JSS Medical College Dept. Geriatrics Dr.Shilpa Averebeel	A phase 2/3, observer-blind, randomized, controlled study to determine the safety and immunogenicity of SPUTNIK-V [SARS-COVID-19 Vaccine] in Indian adults	
Amrita Institute of Medical Sciences, Kochi, Kerala	JSSAHER- JSS Medical College Dept. Com. Medicine Dr.Anil S.Bilimale	Risk factors for SARS-CoV-2 infection among healthcare workers in India: A case control study	

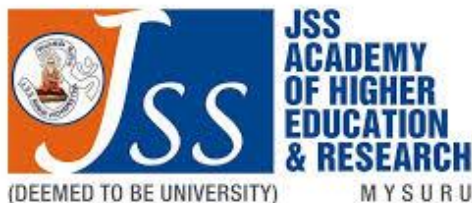
#### **4. DETAILS OF RESEARCH COLLABORATION WITH OTHER UNIVERSITIES/ INDUSTRIES / ORGANIZATIONS**

<b>Name of the University/Industry/ Organization</b>	<b>Nature of collaboration</b>	<b>Coordinating person</b>	<b>Present status / outcome of collaboration</b>
KwaZulu Natal University, South Africa	Academic Research	Dr. S. N. Manjula	Ongoing
Texas Southern University, USA	Faculty & Student exchange	Dr. D V Gowda	Ongoing
Open University of Sri Lanka	Supporting & mentoring B.Pharm Program	Dr. D V Gowda	Ongoing
Biocon Academy, Bengaluru	Knowledge partners for RA Program	Dr. M P Venkatesh	Ongoing
IDP, Mysuru	Required criteria for pursuing higher studies abroad	Dr. Amit B Patil	Ongoing
Embiotic Laboratories (P) Ltd, Bengaluru	Collaborative research & development projects	Mrs. Preethi S	Ongoing
Edhaa Innovations Pvt Ltd Mumbai	Formulation development	Dr. Amit B Patil	Ongoing
Ecocert Group, France	Leading Certifier in COSMOS standard across the globe	Dr. Vikas Jain	Ongoing
NIPER, Hajipur	Collaborative research	Dr. M Ramesh	Ongoing
NIPER, Hyderabad	Collaborative research	Dr. D V Gowda	Ongoing
KDPMA, Bengaluru	Collaborative research & consultancy	Dr. Amit B Patil	Ongoing
Karnataka State Pharmacy Council, Bengaluru	Continuing Pharmacy education program	Dr. M Ramesh	Ongoing
Teresian College, Mysuru	Academic Research	Dr. S. N. Manjula	Ongoing
JSS Academy of Technical Education, Bengaluru	Academic Research	Dr. S. N. Manjula	Ongoing
Govt. Ayurvedic Medical College, Mysuru	Academic Research (RGUHS Sponsored research project)	Dr. K L Krishna	Ongoing
Govt. Ayurvedic Medical College, Mysuru	Academic Research (RGUHS Sponsored research project)	Dr. K L Krishna	Ongoing
Teresian College, Mysuru	Academic Research	Dr. K L Krishna	Ongoing
Biodeal Pharma Pvt. Ltd., Delhi	Formulation & Evaluation of Charcoal Tablet	Dr. Amit B Patil	Ongoing
Biodeal Pharma Pvt. Ltd., Delhi	Formulation & Evaluation of terbinafine spray	Dr. Amit B Patil	Ongoing
University of Saskatchewan, Canada	Research Project	Dr. Saravana Babu C	Ongoing
Govt. Medical College, Calicut	Development of Layered Double Hydroxide loaded with Diclofenoc for Arthritis	Dr. Gangadharappa H V	Ongoing
RL Fine Chemicals, Yelanka, Bangalore	Impurity profiling of CNS Drugs	Dr. Anandkumar Tengli	Ongoing
CFTRI, Mysuru	Cell line studies	Dr. J Suresh	Ongoing

## 5. MEMORANDUM OF UNDERSTANDING AND MEMORANDUM OF ASSOCIATION FOR COLLABORATIVE ACADEMIC AND RESEARCH ACTIVITIES

PARTNERSHIP WITH NGOs & HEALTH CARE ORGANIZATIONS

CAHO (Consortium of Accredited Healthcare Organization)



With the growing number of healthcare organizations achieving NABH, NABL and JCI accreditation, there has been a need for a common platform that will facilitate communication amongst accredited HCOs, Share best practices and provide benchmarking, while promoting and continuously improving the quality and safety of healthcare services provided by HCOs across India, In collaboration with stakeholders

The program has been designed to train the students by the certificate Program developed by CAHO in quality and accreditation. The participants will be empowered with the knowledge and skills to handle quality and accreditation process in healthcare organizations for which JSS is agreed and keen on providing this training in partnership with CAHO

The Program is titled "Certificate Program in Quality & Accreditation (CPQA)

Target Audience-MBA Healthcare, PGDM-Healthcare, Nursing, Dental Surgeon Students

The Program will be led by CAHO and will nominate its representatives/faculty who will take the program forward

Certification will be Jointly done by both the Organizations

Collaboration with Institution name	Area	MOU/MOA
Genomic Medicine Foundation, UK	Medical Genomics	MoU signed
University of Arizona	COVID-19 infection and impact on child development	MoU signed
Sadvaidyasala Pvt., Ltd, Nanjangud, B.V. PUNDIT's Traditional & Herbal Healthcare	Caner Biology	MOU signed
SJCE , Mysuru	AI	MOU signed
Amrita Vishwa Vidyapeetham, AVVP, Kochi, Kerala	Risk Factors for SARS-CoY-2 "infection among health care workers in India: A case control Study"	MOU signed
Nesa MedTech	RFA of Fibroid	MoA- Collaborative Research Agreement

iMERA.AI (UK)	Efficacy of deep learning algorithms in reporting MSK Radiographs	MoA- Collaborative Research Agreement
Ms. Apoorva M R, Ms. Monisha M J, Ms. Meghana P Raman and Ms. Sahana M P	Research work	MoA-Collaborating Project

**Memorandum of Understanding was signed between JSS Medical College, JSS AHER and The Leads Clinical Research and Bio-Services Pvt. Ltd, Bengaluru on 18<sup>th</sup> January 2021 at JSS Medical College, Mysuru.**

The Objectives of the MOU are 1. Conduct of clinical / preclinical trials at JSS Medical College & Hospital, 2. Exchange of facilities and expertise for collaborative or independent research and publications based on the policies of both entities, 3. Joint Academia-Industry clinical research training programs, 4. Conduct of National and International seminars and workshops, 5. Collaborative research proposals for various funding agencies, Research leading on to PhD.

This MOU was initiated by the department of Pharmacology to explore industry academia collaboration to enhance Clinical and Pre clinical studies joint certificate programs in Clinical Research, to undertake scientific projects in the field of drug development and medical research, Time plan for 5 years and many more.

The Scope would also extend to include MSc cosmetic programme, & collaborative external PhD. The company offered internship programme to the eligible students and gave a word that they would help in the placements of MSc students.

The session was graced by the presence of Dr. Kushalappa, Director of Academics, JSSAHER., Dr. Suma, Vice-Principal, JSSMC., Mr. Sathishchandra, Administrative Officer, JSSMC, Mysuru., Dr. Jayanthi M. K., Professor and head, Dept. of Pharmacology, Dr. Sathish A. M., Dr. Pushpa V. H. and Dr. Prathima C. From the counterpart were, Mr. Jestin V. Thomas, Director, The Leads Clinical Research and Bio-Services Pvt. Ltd., Mr. Sony, Head of Finance and H. R.



Organization with which MoU is signed	Year of signing MoU	Duration	List the actual activities under each MoU year wise
South Asian Society of Oral Maxillofacial Implantology (SASOMI) #134, 42 <sup>nd</sup> Cross, 3 <sup>rd</sup> Main, 7 <sup>th</sup> Block, Jayanagar, Bengaluru-560082	15.7.2020	1 Yr. 14.7.2021	<ol style="list-style-type: none"> <li>1. Study Tours &amp; Meeting with Japanese Dental Universities</li> <li>2. MOU /Co-operative arrangements with Japanese Dental Universities/Institutions</li> <li>3. Student Exchange</li> <li>4. Opportunity to host SASOMI symposiums/Conferences/ events at the respective university/institution</li> </ol>

**MoU with Technical Consultancy Services Organization of Karnataka (TECSOK) a Government of Karnataka Organization under the Department of Industries and Commerce, Government of Karnataka, for establishment of Centre of Excellence in Entrepreneurship Development**

SPARKLE CINE a Section 8 company established under the aegis of JSS Academy of Higher Education & Research, Mysuru signed MoU with Technical Consultancy Services Organization of Karnataka (TECSOK) a Government of Karnataka Organization under the Department of Industries and Commerce, Government of Karnataka, for establishment of Centre of Excellence in Entrepreneurship Development. The MoU was signed on 4th of August 2021 at Sri Rajendra Auditorium, JSS College of Pharmacy, Mysuru. Chief Mentor of TECSOK, Dr.M.B.Gururaj and Executive Secretary of JSS Mahavidyapeetha and Director of SPARKLE CINE, Dr.C.G.Betsurmth signed the MoU from the respective organizations. Pro Chancellor of JSS AHER, Dr.B.Suresh, Director Finance of JSS Mahavidyapeetha Sri.S.Puttasubbappa, Director Audits and Accounts, JSS Mahavidyapeetha Sri.K.R.Santhanam, Vice Chancellor Dr. Surinder Singh, Registrar Dr.B.Manjunatha, Director (Academics) Dr.P.A.Kushalappa, Chief Technical Advisor to CEO of TECSOK, Sri.Satyanarayan Rao and TECSOK Project Manager, Ms.Sowmyashree, Coordinator of SPARKLE CINE Dr.S.Prashanth were present during the event.

The officers of JSS AHER, Principals and Heads of the JSS AHER Constituent Colleges and University Departments attended the event both on-site as well as through the virtual mode. The activity of the Centre focuses on development of entire innovation driven startup ecosystem including entrepreneurship awareness, handholding research outcomes from lab to market, encouraging innovations that is relevant to society, addressing the societal problems using startups, exploring funding opportunities for both proof of concept as well as initial setting up of businesses and capital for scaling the business with the expertise of TECSOK. The activities are supported by Technical Consultancy Services Government of Karnataka (TECSOK) and executed by JSS Academy of Higher Education & Research, Mysuru.





**MEMORANDUM OF UNDERSTANDING**

**SPARKLE CINE, JSS AHER – TECSOK  
Centre of Excellence  
in Entrepreneurship Development**

SPARKLE CINE, JSS AHER – TECSOK Centre for Excellence in Entrepreneurship Development (**herein after referred as First Party**), Supported by Technical Consultancy Services Organization of Karnataka (TECSOK) (**herein after referred to as Second Party**) and executed by JSS Academy of Higher Education & Research, Mysuru, is established to provide stronger entrepreneurial ecosystem in the society. The Centre will look at the entire ecosystem of startups - all the way from how to take research from lab to market, how to look at innovation that's relevant to society, how to address the societal problems using startups, how to then encourage funding for both proof of concept as well as initial setting up for the business and then capital for scaling the business with the handholding of already established protocols of TECSOK (Government of Karnataka Organization) and have signed this Memorandum of Understanding entered on this day 4th July' 2021.

**VISION**

To be a world-class, state-of-the-art, Government, Industry and Academia driven Virtual and Actual Entrepreneurship Development Resource, Support and Guidance Platform that Enables Foundation and Growth of Successful start

**MISSION**

To evolve and leverage Government, Industry and Academia partnership in development and growth of India's start-up ecosystem with end-to-end support at a single platform aiming to faster transformation of business ideas to successful ventures impacting social and economic development through employment generation and wealth creation.

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**SS Academy of Higher Education & Research, Mysuru signs MoU with NASSCOM – Centre of Excellence – IoT & AI, New Delhi..**

A Memorandum of Understanding (MoU) was signed between the JSS Academy of Higher Education & Research (JSS AHER), Mysuru, Karnataka, India and the National Association of Software and Service Companies (NASSCOM) - Centre of Excellence for Internet of Things and AI, a Ministry of Electronics and Information Technology initiative supported by Govt. of Karnataka, Haryana, Gujarat and Andhra Pradesh based at New Delhi, India on October 28, 2021, in order to carry out research and develop startups in the area of digital healthcare. The objective of the MoU is to jointly organize and promote the events, thought leadership programs and awareness activities in the area of digital healthcare especially to organize thought leadership sessions, participation in Healthcare Innovation Challenge, Mentoring and Participation of startups incubated / supported by JSS AHER to develop different healthcare related solutions. The collaboration also aims to develop a centre in digital healthcare which would be a Platform for the best minds from industry, academia, start-ups and Government to drive a culture of co-creation & research to find solutions for complex business problems and to highlight India's innovation quotient and workforce development.

JSS AHER, Mysuru has embarked on a journey of merging technology, academics and clinical services for enhanced learning and patientcare in line with the Government of India's vision of promoting digital health across the country. With this collaboration, JSS AHER aims to be a pioneer and leader in the digital health providing access to healthcare for all.



**JSS Academy of Higher Education and Research, Mysuru and Non Aligned Countries Movement Science and Technology Centre ( NAM S&T centre) today inked a historical MOU to cooperate in advancing Science and Technology in the NAM and developing Countries.**

43 countries are the members of the NAM S&T Centre and JSSAHER will support and collaborate various initiatives including creating fellowships for exchange visits, publication of books and organising conferences and meetings with the member countries and their institutions. This is one of the major initiatives of JSSAHER in its Globalisation initiatives. Dr Surinder Singh, Vice Chancellor, JSSAHER and Dr Amitava Bandopadhyay Director General NAM S&T Centre signed the MOU and Dr B. Suresh, Pro Chancellor JSSAHER graced the occasion and congratulated the partnering organisations and gave his assurance for the success of the collaboration.



## 6. COLLABORATIVE PROJECTS OF PREVIOUS YEAR

Funding agency	PI Department	Collaborative Departments	Area of Research
ICMR	Pathology Dr.Pallavi P	Paediatrics Cardiology Biochemistry Community Medicine	Thalassemia
IADVL	Dermatology Dr.Ashwini P K	Microbiology Biochemistry	Acme
DBT Ramalingaswamy Fellow	Biochemistry Dr.Rajesh Kumar T	Community Medicine	Respiratory Disorders
Bhramara Trust	General Medicine Dr.H Basavana Gowdappa	Community Medicine	Diabetes & Vitamin D
SRF (ICMR)	Biochemistry Mr.Venugopal Reddy Bovilla	Biochemistry	Breast cancer
	Biochemistry Mr.Prashanth Kumar M V	Biochemistry	Breast cancer
Imperial College London	Dr.P.A.Mahesh Dept of Respiratory Medicine	Respiratory Medicine	BOLD II (Burden of obstruction Lung Diseases Follow-up in low/middle income countries BOLD II.
ICMR	Mrs.Veena R SRF Dept. of Biochemistry	Biochemistry	Discovering Phytochemicals for promoting Longevity and Healthy Ageing using drosophila model.
CCDC	Dr Nagaraj Desai, Adjunct faculty Cardiolog	Cardiology, Physiology	Yoga based cardiac rehabilitation
NIH, USA PHRII, India	Dr Smitha M C Asst. Prof, Com Medicine	Community Medicine	Adolescent Mental Health
WHO	Dr Ravi Prof, Pediatrics	Pediatrics & OBG	Global vaccine safety
Mayo clinic, USA	Dr.Chetak.K.B Asst. Prof, Pediatrics	Pediatrics	Early Recognition & treatment of Acute illness in pediatrics



## 7. COLLABORATIVE CLINICAL TRIALS

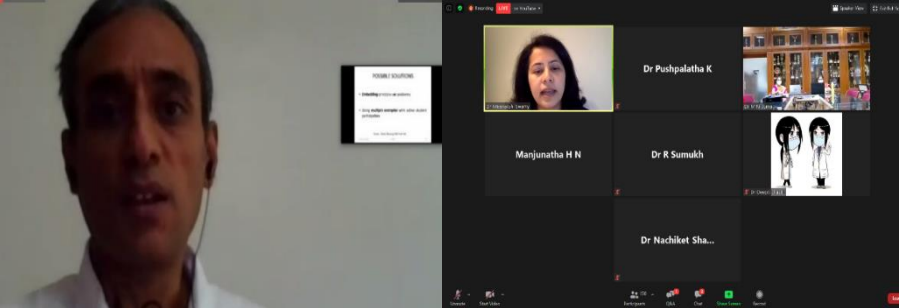

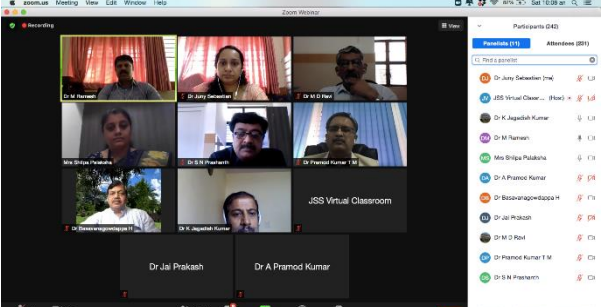
Clinical Trial No.	Clinical Trial name
CTC-115	Biological E-Ltd
CTC-89	JSS Medical Research India Pvt Ltd-TDAP
CTC-107	CBCC Global Research Ltd
CTC-108	Serum Institute-HEXA
CTC-064	CBCI Society for Medical Education
CTC-106	Astrazenca
CTC-96	Skarray Technology
CTC-64	The International Poly Cap Study (TIPS-3)
CTC-87	Klineria global services
CTC-93	Cliantha Research Limited
CTC-94	Renalyx Health Systems Pvt. Ltd, Bangalore
CTC-97	Biological E Limited
CTC-98	Norwich Clinical Services Pvt.Ltd, Bangalore
CTC-101	IQVIA RDS INDIA PVT.LTD. (Kowa Research Institute, Inc)
CTC-103	SYNEOS HEALTH UK LIMITED
CTC-104	Biological Limited
CTC-105	Syneous Health UK Ltd
CTC- 111	Indian Immunologicals Limited, Hyderabad
CTC-114	Lambda Therapeutic Research Ltd.

## 8. BOOKS/ CHAPTERS AUTHORED THROUGH COLLABORATIONS



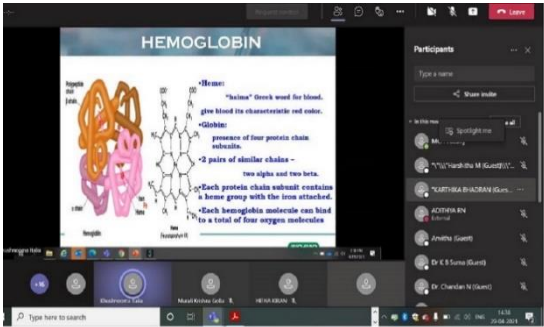

<u>Biochemistry</u>	<u>Microbiology</u>	<u>Microbiology</u>
<p>Marco Nuno De Canha, Danielle Twilley, B. Venugopal Reddy, <b>SubbaRao V.</b> Madhunapantula, N. P. Deepika, T. N. Shilpa, B. Duraiswamy, S. P. Dhanabal, Suresh M. Kumar, Namrita Lall</p> <p>Title of the Chapter / Book Aquatic Plants Native to Asia and Australia</p> <p>Published by Taylor and Francis Group – 2020</p> <p>ISBN No. 9780429429095</p>	<p>Dr, Deepashree R, Co-editor</p> <p>Title of the Chapter / Book Essentials of Medical Microbiology, 3rd Edition.</p> <p>Published by Jaypee publishers – 2020</p> <p>ISBN No. 978-81-947090-1-5</p>	<p>Dr, Deepashree R, Chapter Author</p> <p>Title of the Chapter / Book Postgraduate Medicine Book (Antimicrobial Stewardship)</p> <p>Published by Jaypee publishers 2021 (Tentative publishing year - 2021 Feb)</p>
<u>Anaesthesia</u>	<u>Ophthalmology</u>	<u>Ophthalmology</u>
<p>Dr. Nalini Kotekar</p> <p><b>Title of the Chapter / Book</b> Anaesthesia for paraoesophageal hernia repair</p> <p><b>Published by</b> Springer – 2020</p> <p>ISBN No. 978-3-030-64738-4</p>	<p>Dr.Prabhakar S K</p> <p>Title of the Chapter / Book Ocular Infections after Penetrating Keratoplasty (New Insights into Disease and Pathogen Research</p> <p>Published by International Book Publisher – 2020</p> <p>ISBN No. 78-93-89816-30-3</p>	<p>Dr.Prabhakar S K</p> <p>Title of the Chapter / Book Study on the Validity of Novel Microsoft Excel Software for Calculating Surgically Induced Astigmatism</p> <p>Published by International Book Publisher – 2020</p> <p>ISBN No. 978-93-90206</p>
<u>Biochemistry</u>	<u>Pathology</u>	<u>Comm. Medicine</u>
<p><b>Puttalingaiah S,</b> Greeshma M. V., Kuruburu M. G., Bovilla V. R., <b>SubbaRao V.</b> Madhunapantula.</p> <p><b>Title of the Chapter / Book</b> Naturally occurring histone deacetylase (HDAC) inhibitors in the treatment of cancers.</p> <p><b>Published by</b> In Phytomedicine and Natural Products, Edited by Namrita Lall, CRC Press, Chapter 8 – 2021</p>	<p>Dr.Nandini N M</p> <p><b>Title of the Chapter / Book</b> Recent Concepts in Thyroid Cytology with Emphasis on Ancillary Techniques</p> <p><b>Published by</b> BP International – 2021, Vol.5</p>	<p>Dr. Sunil Kumar D. Dr. Praveen Kulkarni</p> <p><b>Title of the Chapter / Book</b> Climate change &amp; Health housing</p> <p><b>Published by</b> IAPSM TB of Community Medicine (2<sup>nd</sup> Edition) – 2020</p>
<u>Medicine</u>		
Dr.H.Basavana Gowdappa	Dr.H.Basavana Gowdappa	Dr.K.M.Srinath

<p><b>Title of the Chapter / Book</b> Managing Dermatophytosis (Tinea infections) in Today's Scenario</p> <p><b>Published by</b> Medicine updates – 2021 Vol.31</p> 	<p><b>Title of the Chapter / Book</b> Managing Dermatophytosis (Tinea infections) in Today's Scenario</p> <p><b>Published by</b> Medicine updates – 2021 Vol.31</p> 	<p><b>Title of the Chapter / Book</b> Understanding the Role of Vitamin D in Diabetic Nephropathy</p> <p><b>Published by</b> Medicine updates – 2021 Vol.31</p> 
<p><b>Medicine</b></p>	<p><b>Geriatrics</b></p>	<p><b>E.N.T.</b></p>
<p>Dr.K.C.Shashidhara</p> <p><b>Title of the Chapter / Book</b> Effect of COVID-19 on Health care Workers</p> <p><b>Published by</b> Medicine updates – 2021 Vol.31</p> 	<p>Dr. Prathibha Pereira</p> <p><b>Title of the Chapter / Book</b> Ageing Care and well being Chapter:Mental health and the Elderly</p> <p><b>Published by</b> RAWAT Publications – 2020 ISBN No. 9788131611272</p> 	<p>Amulya Thotambailu, Deepu Cheriamane, Manjula Santhepete, Satheesh Kumar Bhandary, Jilu Avanippully, and Prakash Bhadravathi</p> <p><b>Title of the Chapter / Book</b> Role of Pomogranate in management of cancer – A Journal Intertech Open Access Books</p> <p><b>Published by</b> Intech open - 2021</p>
<p><b>Dermatology</b></p>	<p><b>Dermatology</b></p>	<p><b>Psychiatry</b></p>
<p>Dr.Kantharaj.G.R Dr.Jayadev.B.Betkerur</p> <p><b>Title of the Chapter / Book</b> Contributed to ACSI (Association of Cutaneous Surgeons of India) Chapter 133 :- Tele Dermatology consultation in Cutaneous and Esthetic Surgery</p> <p><b>Published by</b> Jaypee Publisher – 2021</p> 	<p>Dr.Ashwini P.K.</p> <p><b>Title of the Chapter / Book</b> Essential of Psychiatry for Dermatology and Aesthetic Practice</p> <p><b>Published by</b> Apsara Prakashana – 2021 ISBN No. : 978-81-948549-6-8</p> 	<p>Dr.Kishor M.</p> <p><b>Title of the Chapter / Book</b> Essential of Psychiatry for Dermatology and Aesthetic Practice</p> <p><b>Published by</b> Apsara Prakashana – 2021 ISBN No. : 978-81-948549-6-8</p> 

## 9. TRAINING PROGRAMME /CME / WORKSHOP / CONFERENCE CONDUCT THROUGH COLLABORATIONS

Name of the programme	Collaborators
<p>Webinar on “Challenges in Implementation of CBME Curriculum in Anatomy”, on 3<sup>rd</sup> October 2020.</p>	<p>St.John’s Medical College, Bengaluru            Vinayaka Mission’s Kirupananda Variyar Medical college &amp; hospital, Salem, TN            School of Medical Education, Framlington, New castle University, UK</p> 
<p>International webinar on Adversity quotient In the era of the ‘new normal on 30 July 2020</p>	<ul style="list-style-type: none"> <li>• Tata Institute of Fundamental Research (TIFR), Mumbai;</li> <li>• Indian Institute of Technology (IIT) Bombay, Mumbai;</li> <li>• Indian Institute of Science Education and Research (IISER) Kolkata,</li> <li>• Northwell Health/Zucker Hillside Hospital, New York, USA.</li> </ul> 
<p>Webinar on “Vaccine Safety: Basics to Advanced” on 19<sup>th</sup> Dec. 2020</p>	<ul style="list-style-type: none"> <li>• JSS College of Pharmacy, Mysuru</li> <li>• PvPI &amp; Senior Principal Scientific Officer, Indian Pharmacopoeia Commission, Ghaziabad</li> <li>• Postgraduate Institute of Medical Science &amp; Research, Kolkata</li> </ul> 

<p>Training program of sickle cell disease</p> <p>A training program was organized for Frontline health staff and ASHA in Annur PHC of HD Kote Taluka</p>	<ul style="list-style-type: none"> <li>• ICMR National Task Force Sickle cell disease</li> </ul> 
<p>CME on Management of Sickle cell disease</p> <p>CME program for medical officer training was organized on 23<sup>rd</sup> January 2021 at College Council Hall, JSS Medical College, Mysore.</p>	<ul style="list-style-type: none"> <li>• ICMR National Task Force Sickle cell disease</li> </ul> 
<p>Critical care Nephrology update India was organized on 5<sup>th</sup> Annual Highlights Feb 12<sup>th</sup> – 14<sup>th</sup> 2021</p>	<p><b>AKI CRRT 2020 SAN DIEGO</b></p> 
<p>Webinar on Preventive Oncology 23<sup>rd</sup> January 2021</p>	<ul style="list-style-type: none"> <li>• Karnataka State Chapter- Association of Gynae Oncologists of India</li> </ul> 

<p>Symposium on “Epithelial ovarian cancer” 30 January 2021</p>	<ul style="list-style-type: none"> <li>• Karnataka State Chapter- Association of Gynae Oncologists of India</li> </ul>	
<p>Symposia SAMBAV: Health Professionals as Mental Health Facilitators 11<sup>th</sup> &amp; 12<sup>th</sup> June 2021.</p>	<ul style="list-style-type: none"> <li>• Indian Psychiatric society</li> <li>• NIMHANS, Bengaluru</li> <li>• MVJ Medical College</li> <li>• Adichunchanagiri Institute of Medical Sciences, Bellur</li> </ul>	
<p>Online CME on "Current Concepts of Prevention and Detection of Hemoglobinopathies by HPLC" on 29<sup>th</sup> April 2021 between 2:30 to 4:30 PM.</p>	<ul style="list-style-type: none"> <li>• Bio-Rad laboratories</li> </ul>	
<p>SAFL app a free android mobile application was launched on 19-11-2020</p>	<ul style="list-style-type: none"> <li>• Mysuru district administration</li> </ul>	

World Tuberculosis Day – 23-03-2021 CME with the theme TB Control in India: The clock is ticking on 23<sup>rd</sup> March 2021.

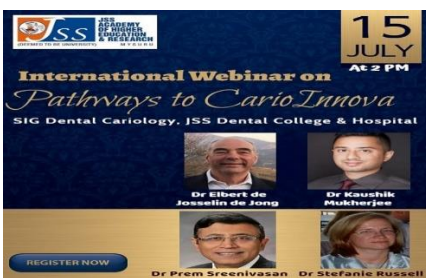
- Mysuru District TB Control Authorities



### Management Of Early Childhood Caries & Navigating The Pandemic- A Pediatric Dentist`S Perspective

International Webinar was organised by SIG Dental Cariology , JSS Dental College & Hospital on 2nd July in association with Indian Society of Pedodontics & Preventive Dentistry (ISPPD) .

Speakers : Dr Prathip Phantumvanit , Ex-Dean , Faculty of dentistry , Thammasat University , Thailand & WHO Expert Panel on Oral health. Dr Ilaya Rajagopal , Chief of Dentistry , Department of Surgery , Meritus Hospital , Hagerstown MD The Webinar was moderated by Dr B Nandlal , Professor & Head , Department of Pedodontics , JSSDCH & Dr Paras Mull J , Reader , Department of Conservative Dentistry & Endodontics , JSSDCH.



### Pathways To CariInnova

A Webinar titled ' Pathways to CariInnova' was organized by SIG Dental Cariology , JSS Dental College & Hospital , Mysuru on 15th July 2020 , moderated by Dr Ravindra S , Principal JSS Dental College & Hospital, Dr Nandlal Bhojraj , Professor & Head , Department of Pedodontics Dr Paras Mull J , Reader , Department of Conservative Dentistry & Endodontics , Dr Raghavendra Shanbhog , Reader , Department of Pedodontics , Dr Pratibha S , Reader , & Dr Anitha S , Reader , Department of Periodontology .

The Speakers were Dr Elbert de Josselin de Jong , Dr Kaushik Mukherjee , Dr Prem Sreenivasan & Dr Stefanie Russell .The Webinar was attended by Undergraduates , Faculty, Post-Graduates & Private dental practitioners .

### Pan-Pacific Implantology Society PPIS 19th Annual Academy Meeting

Dr. Avinash BS, Reader, Department of Periodontology was invited to speak at the 19th Annual Academy meeting of Pan-Pacific Implantology Society PPIS. It was a virtual conference held on 13th March 2021. This conference was organized by Taiwan Academy of Implant Dentistry. Dr. Avinash spoke on the topic “Soft Tissue Augmentation Around Dental Implants”.

### International Webinar By Dr Mohit Kothari

Oral care is essential to maintain oral health and prevent complications such as periodontal diseases and tooth loss in patients with brain injury. An International Webinar was organized by the Departments of Periodontology and Conservative Dentistry & Endodontics, JSS Dental College & Hospital on 12th April 2021. The Resource Faculty Dr Mohit Kothari, being an adjunct faculty at JSSDC&H, JSS AHER is an Associate Professor, Hammel Neurorehabilitation Centre (HNRC) Aarhus University (AU), Denmark. He gave a lecture on periodontitis and systemic impairment in brain injury patients. He emphasized on a Multi disciplinary team approach for the treatment of such cases. From Bench (Research) to Bed Side Approach.

Department of Nutrition & Dietetics , FLS conducted **Indo – Iran International workshop on “ Recent trends and tools in Dietetics”**, on **January 22<sup>nd</sup> 2020**, the resource person was **Dr. Sara, Dietitian, Iran** and **Ms. Shobha Chandrashekhar, Clinical Nutritionist, Bengaluru**.





## Collaborative webinars were conducted in JSSAHER supporting SDG 17& SDG 3

Title of Web lecture with date	Resource Person/s	Total No. of Participants
Circumventing Cellular-Stress in Cancer – A novel treatment Strategy On 30th June 2020	Dr. Nirmal Robinson Head, Inflammation and Human Ailments Division Centre for Cancer Biology University of South Australia, Adelaide, Australia	220
Immune Response to Virus Infection On 30th June 2020	Dr. Manas Mandal Ass. Professor Roseman University of Health Sciences College of Pharmacy, Nevada, USA	100
Pharmacometrics applications in drug development and patient care . On 30 June 2020	Dr Ayyappa Chaturvedala, Associate Professor, Univ. of Nothern Texas, USA	150
Role of Biologics in the management of rheumatoid arthritis / osteoporosis On 30 June 2020	Dr Debra Rowett, Professor, School of Pharmacy, University of South Australia, Adelaide, Australia	200

### 10. INTERNATIONAL GUEST SPEAKER AND THEIR LECTURES

Name of the Expert	Affiliation of the expert	Date	Lecture Topic	No. of participants attended
Dr. Chris Alderman	Associate Professor, University of South Adelaide, Australia	01/07/2020	Clinical Pharmacy Practice.	75
Dr. Ronald Castelino	Senior Lecturer in Pharmacology & Clinical Pharmacy, Faculty of Medicine and Health, University of Sydney, Australia	09/07/2020	Chronic Kidney Injury	75
Dr. Ronald Castelino	Senior Lecturer in Pharmacology & Clinical Pharmacy, Faculty of Medicine and Health, University of Sydney, Australia	16/07/2020	Acute Kidney Injury	75
Dr. Ronald Castelino	Senior Lecturer in Pharmacology & Clinical Pharmacy, Faculty of Medicine and Health, University of Sydney, Australia	23/07/2020	Cardiovascular Diseases	75
Dr. Ronald Castelino	Senior Lecturer in Pharmacology & Clinical Pharmacy, Faculty of Medicine and Health, University of Sydney, Australia	30/07/2020	Diabetes Mellitus	75

Dr. Sunitha Srinivas	Visiting Professor, Rhodes University, Grahamstown, South Africa	07/08/2020	“Catalysing opportunities to strengthen pharmacovigilance during COVID 19 pandemic”	75
Dr. Sunitha Srinivas	Visiting Professor, Rhodes University, Grahamstown, South Africa	12/08/2020	„Utilising COVID-19 Pandemic to Strengthen the Dialogue of Access to Essential Medicines and Vaccines“	75
Dr. Sunitha Srinivas	Visiting Professor, Rhodes University, Grahamstown, South Africa	19/08/2020	“Managing the Double Edged Sword – Antimicrobial Resistance and COVID”	75
Dr. Jisha M Lucca	Asst. Professor, Dept. of Pharmacy Practice, Imam Abdulrahman Bin Faisal University Dammam, KSA	04/09/2020	“Substance Abuse: The Real War on Drugs”	75
Dr. Jimmy Jose	Associate Professor (Pharmacy Practice/ Clinical Pharmacy) School of Pharmacy, College of Pharmacy and Nursing, University of Nizwa, Birkat Al Mouz, PB 33, PO 616, Nizwa, Sultanate of Oman	07/10/2020	“Working Approach for Research in Pharmacy Practice”	75
Mrs Christy Mary Sam	School of Pharmacy, University of Nizwa, Sultanate of Oman	10/10/2020	Health Care System in Sultanate of Oman – A Pharmacist Perspective	70
Ms. Saranya Lisa Rajan,	Manager, Clinical Data Coding, IQVIA, Bangalore	16/10/2020	Overview of Data Management and Medical Coding”	72
Dr. Smitha Vikram and Dr. Divya Sunil from Avigna Clinical Research Institute (ACRI)	Clinical Expert	30/11/2020	„Emerging Career Opportunities in Clinical Research and Clinical Data Management – Impact During COVID-19“	82

## **11. WEBINAR ON TEACHING, LEARNING AND RESEARCH DURING PANDEMIC-A COLLABORATIVE APPROACH.**

### **Dr. K. Gowthamarajan, Coordinator**

The inaugural function of live webinar on teaching, learning, and doing research during emergency was organised in association with Institution's Innovation Council (IIC) of JSSCPO on 23 Sep 2020. Dr. S.P. Dhanabal, Principal welcomed the speaker, Dr. Surajit Dey, Associate Professor of Pharmaceutical Sciences, College of Pharmacy, Roseman University of Health Sciences, USA. Dr. K. Gowthamarajan, HoD introduced the speakers to the delegates.

The sessions began with an introduction about education method and models used at Roseman University during the pandemic situation. He elaborately discussed about various virtual platform can be used for online teaching. He also addressed various questions of our faculties and students on US higher education, examination, and teaching model etc., A total of 120 delegates participated in this webinar.

### **Webinar on Phytopharmaceuticals Regulations & Pharmacopeial Standards (Dt. 05 Aug 2020) Dr.GNK Ganesh, Coordinator**

opic: Evidence Based Nutrition (Ebn): Compare and Contrast to Evidence Based Pharmaceutics (Ebp): Establishing Recommended Intake Levels for Non-Essential Health-Promoting Compounds

Speaker: Dr.James C. Griffiths, Senior Vice President, International & Scientific Affairs, CRN-International, USA

### **Department Of Pharmaceutical Biotechnology:**

#### **Dr. Ashish Wadhvani and Dr. R Rajeshkumar, Coordinators**

(a). Virtual Webinar on Circumventing Cellular-Stress in Cancer - A novel treatment Strategy on 30th June 2020. The resource person was Dr. Nirmal Robinson, Head, Inflammation and Human Ailments Division Centre for Cancer Biology University of South Australia. 121 students actively participated and his presentation helped the students to understand cellular process of cancer and its cascading effects due to stress, as well as current knowledge needed for students with a research outlook. An interactive discussion with participants and panel members on various conceptual developments in the pharmaceutical research.

(b). Virtual Webinar on Stem Cells - Promise In Disease Modelling And Drug Discovery on 27 August 2020. The resource person was Dr.Preethi Vijayaraj , Principal Scientist -Drug Concept Discover, Immunology & Respiratory' Boehringer Ingelheim, USA. 142 students actively participated. And her talk covered the importance of stem cells and its applications in pharmaceuticals and various models. An interactive discussion with participants and panel members on various concrete developments in the therapeutic research.



## **Department Of Pharmaceutical Chemistry**

### **AICTE Sponsored One-week Short Term Training Programme (STTP) on “Recent advances in Drug Discovery, Development and Lead Optimization”**

**Dr. R. Kalirajan, Coordinator**

Online Module - I (10-8-2020 to 15-8-2020)

Online Module - II (07-9-2020 to 12-9-2020)

Online Module - III (05-10-2020 to 10-10-2020)

Course duration: One-week Timings: 10.00 am to 1.00 pm & 2.00 to 5.00 pm

The First module of the programme was inaugurated on 10-08-2020 at 10 pm by Dr. S.P. Dhanabal, Principal, JSSCP, Ooty and Dr. R. Kalirajan, Asst. Professor and coordinator of STTP delivered the welcome address. Dr. Md. Afzal Azam, Professor & Head highlighted the importance of computational chemistry tools in modern day to day research and explain about the programme. Dr. R. Raghu, Vice President, Schrodinger LLC, Bengaluru briefed about the importance of computational tools in the modern drug discovery. Col B Venkat, Director, (Faculty Development Cell), AICTE, New Delhi also participated in the inaugural function through virtual mode.

The external experts from various reputed organizations such as Mr. Surojit Sadhu, Advent Informatics, Pune, Dr. Girinath Pillai, Zastra Innovations, Bengaluru, Dr. P. Bharathidasan, Chief Technical Manager Bio Pharma Labs, Hyderabad Dr. Karthikeyan M, Senior scientist, National Chemical Laboratory, Pune Dr. N. Ayyadurai, Senior Scientist, Biotechnology Division, Central Leather Research Institute, Chennai and Dr. S. Murugesan, Associate Professor, BITS, Pilani, are given lectures and demo on various computational tools. As per schedule, the department faculties are moderate and introduce each resource person. Also some of our internal resource persons also delivered lectures on various topics.

About 40 delegates (faculties) from various parts of India were selected from 100 applications received for the I-module. The delegates attended all the lectures from 10 am to 01 pm in the forenoon session and 2-5 pm in the afternoon session. The feedback about all the lectures and demo presentation was collected on daily basis and was highly appreciated by all delegates.

At the last day (15-08-2020) of the module-I, the online assessment was conducted by posting the questions delegates from all the lecture topics. The E-certificates were issued to all the delegates and resource persons. At the end of module-I, in the valedictory, Dr. Afzal Azam, Head of the department was consolidated about programme and feedback was given by some of the delegates. Dr. R. Kalirajan, coordinator of STTP delivered the vote of thanks.

The Second module of the programme was inaugurated on 07-09-2020 at 10 pm by Dr. S.P. Dhanabal, Principal, JSSCP, Ooty and explain the highlights of the college. Dr. R. Kalirajan, coordinator of STTP delivered the welcome address. Dr. Md. Afzal Azam, highlighted the importance of computational tools.

The external experts from various reputed organizations such as Ravikumar Muttineni and Dr. Kranthi raj from Immunocure, Dr. Pritesh Bhat, Dr. Sudarsan, Dr. Prajwal Nandekar, Mr. Vinod Devaraji, Senior Scientist - Applications, Schrodinger LLC., Bengaluru, Dr. Girinath Pillai, Zastra Innovations, Bengaluru, Dr. Dhivya Shanmugam, from Altem Technologies (P), Ltd, Bengaluru, and Dr. S. Murugesan, Associate Professor, BITS, Pilani, are given lectures and demo on various computational tools. As per schedule, the department faculties are moderate and introduce each resource person. Also some of our internal resource persons also delivered lecture on various topics.

About 40 delegates (faculties) from various parts of India are selected from the applications received for the II-module. Delegates attended all lectures from 10 am to 01 pm in the forenoon session and 2-5 pm afternoon session. The feedback about all the lectures and demo was collected on daily basis and was highly appreciated by all delegates.

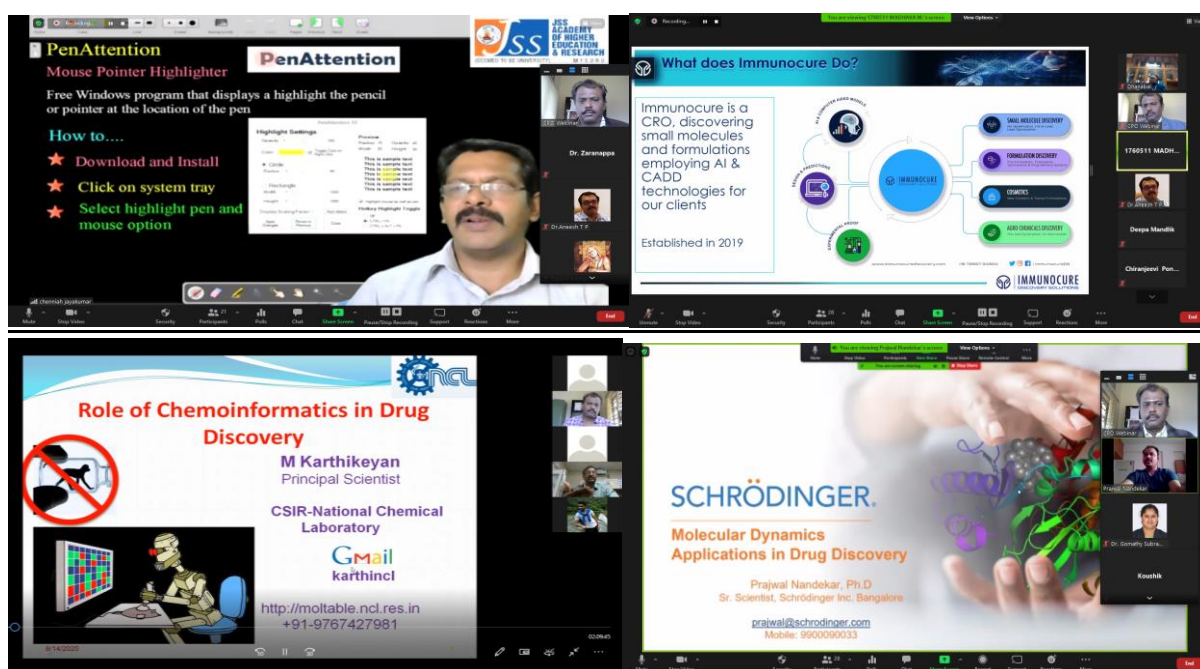
At the last day (12-09-2020) of the module-II, the online assessment was conducted by posting questionnaires to all delegates from all the lecture topics. The E-certificates are issued to all delegates and resource persons. At the end of module-II, in the valedictory, Dr. Afzal Azam, Head of the department was consolidated about the programme, feedback was given by some delegates. Dr. R. Kalirajan, coordinator of STTP delivered the vote of thanks.

The Third module of the programme was inaugurated on 05-10-2020 at 10 pm by Dr. S.P. Dhanabal, Principal, JSSCP, Ooty and explain the highlights of the college. Dr. R. Kalirajan, delivered the welcome address. Dr. Md. Afzal Azam, Professor & Head highlighted the importance of computational tools.

The external experts from various reputed organizations such as Ravikumar Muttineni and Dr. Kranthi raj from Immunocure, Dr. Girinath Pillai, Zastra Innovations, Bengaluru, Mr. Surojit Sadhu, Advent Informatics, Pune, Dr. Karthikeyan M, Senior scientist, National Chemical Laboratory, Pune Dr. Dhivya Shanmugam, from Altem Technologies (P), Ltd, Bengaluru, and Dr. P. K. Krishnan Namboori, CEO, Biopharma solutions, are given lectures and demo on various computational tools. As per schedule, the department faculties are moderate and introduce each resource person. Also some of our internal resource persons also delivered lecture on various topics.

About 40 delegates (faculties) from various parts of India are selected from the applications received for the III-module. The delegates attended all lectures from 10 am to 01 pm in the forenoon session and 2-5 pm in the afternoon session. The feedback about all the lectures and demo was collected on daily basis and was highly appreciated by all delegates.

At the last day (10-10-2020) of the module-III, the online assessment was conducted by posting questionnaires to delegates from all the lecture topics. The E-certificates are issued to all the delegates and resource persons. At the end of module-III, in the valedictory, Dr. Afzal Azam, Head of the department was consolidated about programme and feedback was given by some delegates. Dr. R. Kalirajan, coordinator of STTP delivered the vote of thanks.



**JSSAHER, Mysuru Sponsored one day Virtual Symposium on “Building an innovation platform through artificial intelligence in drug discovery” during 11<sup>th</sup> December, 2020. Dr. Gomathy S, Organizing Secretary**

Artificial Intelligence (AI) can help academic researchers to identify drug targets, find good molecules from data libraries, suggest chemical modifications, and identify candidates for repurposing and so on. Imaging-based information can be used as an additional source of information for existing virtual screening methods, thereby making drug discovery more efficient. Integrative computational biology and AI help improve treatment of complex disease by building explainable models. These models use different mathematical methods, and help to predict new targets for known compounds, repurpose to new indications, search for compounds with specific multi-target profile, or identify potential liabilities. AI will also significantly reduce the probability of human error and study historical data to cut costs.

The program was inaugurated by Dr. S.P. Dhanabal, Principal and all faculties of the department were present. Dr. Gomathy S, Organizing secretary, welcomed the gathering and Dr. Md. Afzal Azam, Convener, briefed about the genesis of the symposium. Dr. S.P. Dhanabal, Principal, delivered his presidential address and highlighted the activities of JSSCPO, during this pandemic situation. He also stressed about the importance of the symposium in worldwide scenario.

Scientific Session : 10 am – 1 pm

Session 1: 10 - 11.30 am

Topic : Drug Discovery in the age of AI: Automation of the ML/DL for end-to-end (E2E) application in drug discovery and development

Speaker: Dr. M. Ravikumar, Senior Scientist & founder, Immunocure, Hyderabad.

Session 2: 11.30 am-1.00 pm

Topic : Application of Artificial Intelligence in drug design of Anti-cancer agents

Speaker: Dr. M. Karthikeyan, Senior Principal Scientist, CSIR-NCL, Pune

E-Presentation Session: 2.00 PM – 4.30 PM

We have received about 53 abstracts from over all India, based on the merit and three stage screening 28 abstracts were categorized and have been shortlisted for e- presentation. The following evaluators have been nominated for poster presentation under three category.



**Drug Design of Anti-Cancer Agents**

**Dr. M. Karthikeyan**  
Senior Principal Scientist  
CSIR-National Chemical Laboratory, Pune

Anti-Cancer Drugs

Personalized Medicine

National Virtual Symposium on "Building an Innovation Platform through Artificial Intelligence in Drug Discovery" 11 Dec 2020 (Online)

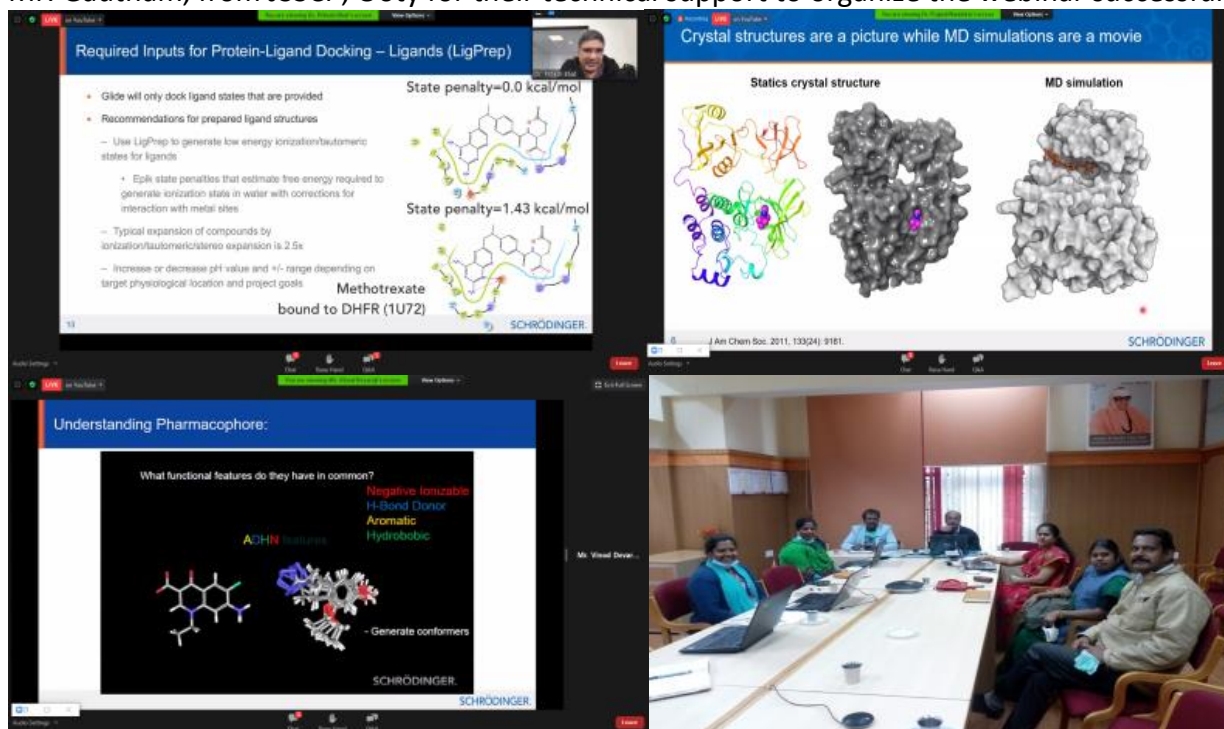
## One day webinar on “Recent Advance in Drug Design: State of the Art Tools for Drug Design and Drug Discovery”

**Dr.R.Kalirajan, Organizing Secretary**

This program was conducted on 23<sup>rd</sup> June in association with Schrodinger LLC, Bengaluru. The workshop was inaugurated by Dr. S. P. Dhanabal, Principal and patron of webinar. Dr. S. Ponnusankar, Professor and Co-convenor delivered the welcome address. Dr. Md. Afzal Azam, Prof & Head and Convenor highlighted the importance of computational chemistry tools in modern day to day research and genesis of the workshop. Dr. R. Raghu, Vice President, Schrodinger LLC, Bengaluru briefed about the importance of computational tools in the modern drug discovery.

A total of 2128 delegates have registered from various countries such as India, United States of America, Saudi Arabia, Bahrain, Hong Kong etc. More than 50% of delegates are senior faculty, and research scholars from various discipline like Bioinformatics, Biotechnology, Pharmacology and Pharmaceutical Chemistry. Dr. Gomathi Subramanian, Asst. Professor, *proposed* vote of thanks.

Herewith we take this opportunity to thank, JSS AHER, Mysuru and especially Dr. Ravindra and his team for their IT support for the smooth conduct of this webinar through ZOOM and Mr. C. Jayakumar, Asst. prof and Mr. Gautham, from JSSCP, Ooty for their technical support to organize the webinar successfully..



## National Webinar on “Simple to complex genetic disorders; A fascinating journey” (Dt. 28 July, 2020)

**Dr. S. Jubie, Coordinator**

A national webinar on “Simple to complex genetic disorders;A fascinating journey” which is organized in association with Institution’s Innovation council, JSSCPO. Dr. Giriraj R Chandak, Senior Principal Scientist (Scientist-F) and Group Leader, CSIR-Centre for Cellular and MolecularBiology (CSIR-CCMB) Uppal Road, Hyderabad was the resource person.

Dr. Md. Afzal Azam, Prof& Head, welcomed the gathering and given the introductory remarks about the webinar. Dr. S. Jubie, co-ordinator of the webinar, introduced the resource person to the audience. After the introduction, the resource person delivered a detailed talk on genetic disorders and how it will be correlated with pharmaceutical research. Around 75 participants comprising of faculty members, PhD scholars and PG students participated effectively and interacted with the speaker. They conveyed that more such programs should be conducted to enable the PG students, research scholars and teachers to proactively participate. Dr.S.Gomathy, delivered the vote of thanks and the webinar came to an end.



**“Demo Session on Data Mining in Drug Discovery” (Dt. 24 June, 2020) Dr. Md. Afzal Azam, Coordinator**

A demo session on Data Mining in Drug Discovery was organized. Dr. Surojit Sadhu, Founder, Advent Informatics, Pune, Maharashtra as the resource person.

Dr. Md. Afzal Azam, welcomed the gathering and given the introductory remarks about the demo session. He introduced the resource person to the participants. Around 40 participants comprising of faculty members, PhD scholars and PG students participated effectively and interacted with Dr. Surojit Sadhu. They conveyed that more such programs should be conducted to enable the PG students, research scholars and teachers to proactively participate. Dr. Md. Afzal Azam delivered the vote of thanks and the demo came to an end.

**Webinar on “Application of Quantum Mechanics, Molecular Mechanics and Artificial Intelligence for Drug Discovery” (Dt. 2-5 June, 2020)**

**Dr. Md. Afzal Azam, Coordinator**

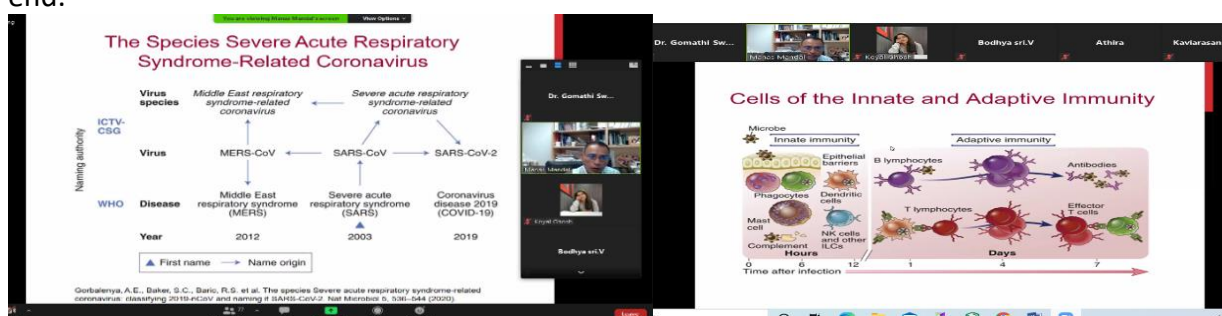
A webinar on “Application of Quantum Mechanics, Molecular Mechanics and Artificial Intelligence for Drug Discovery” was organized. Dr. Ravikumar Muttineni, Founder & CSO, Immunocure, as the resource person. Dr. Md. Afzal Azam, welcomed the gathering and given the introductory remarks about the webinar. He introduced the resource person to the participants. Around 43 participants comprising of faculty members, PhD scholars and PG students participated effectively and interacted with the speaker regarding quantum & molecular mechanics, artificial intelligence for drug discovery. Dr. Md. Afzal Azam delivered the vote of thanks and the demo came to an end.

**International webinar on “Immune Response to Virus Infection” (Dt. 01.07.2020)**

**Dr. Md. Afzal Azam, Coordinator**

A webinar on “Immune Response to Virus Infection” was organized. Dr. Manas Mandal, Fulbright Specialist, Associate Professor, Roseman University of Health Sciences, College of Pharmacy, 11 Sunsetway, Henderson, Nevada-89014. Founder & CSO, Immunocure, as the resource person.

Dr. Md. Afzal Azam, welcomed the gathering and given the introductory remarks about the webinar. He introduced the resource person to the participants. Around 92 participants comprising of faculty members, PhD scholars and PG students participated effectively and interacted with the speaker regarding virus infection and immune response. Dr. Md. Afzal Azam delivered the vote of thanks and the demo came to an end.





**Webinar on Exploring Medicinal Plants for Pharmaceuticals & Cosmeceuticals including the COVID - 19 ,  
JSSAHER (Dt. 15 July 2020)**

**Mr. G. Ramu, Coordinator**

This program was organised jointly with Institution's Innovation Council (IIC) on "Exploring Medicinal Plants for Pharmaceuticals & Cosmeceuticals including the COVID - 19" on 15<sup>th</sup> July 2020.

Resource person of the Webinar was Prof. Namrita Lall, NRF/DST Chair, Plant Health Products from IKS, University of Pretoria, Republic of South Africa. The Webinar was initiated by Dr. S. P. Dhanabal Principal and inaugurated by Dr. Suresh K. Mohan Kumar, Professor and Research Director and all the Faculties of the Department and the College have actively participated in the Webinar.

In her webinar, explored some of the important medicinal plants for pharmaceuticals and cosmeceuticals including the COVID-19. This Webinar has been conceptualized to provide the platform to be able to get to know about some developments of medicinal plants in particular aspect of medicine against COVID-19.

Around 80 students and all the staff members benefitted from this webinar. Ms. S Priyadarshini, Lecturer proposed vote of thanks.



**Webinar on "Preclinical Drug Trials in Neurodegenerative diseases" (Dt. 12 Aug 2020)**

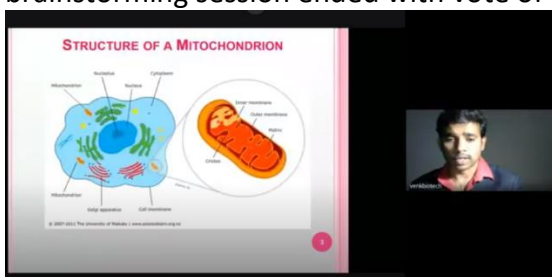
**Dr Rajendiran K, Convener**

"Preclinical Drug Trials in Neurodegenerative diseases" been delivered by Dr. Sudhakar R Subramaniam, on 12th August 2020. A total number of 172 participants, including scholars, faculties, external invitees and students were benefitted. Resource person: Dr. Sudhakar R Subramaniam, Neuroscientist, Abb Vie, California, USA. The resource person, being the Alumnus of JSS CPO, been greeted by Dr SP Dhanabal. The bio sketch of the resource person was shared by Ms Priyadarshini. The recent drug development process in neurodegenerative diseases been well addressed and the content been delivered with more of experimental proof in drug discovery process. Dr Sudhakar, shared his research journey and acknowledged the role of JSS CPO in his research endeavor. The brainstorming session ended with vote of thanks by Mr G Ramu.

**Webinar on Mitochondrial Protein quality control in Cardio protection (Dt. 14 Aug 2020)**

**Dr Rajendiran K, Convener**

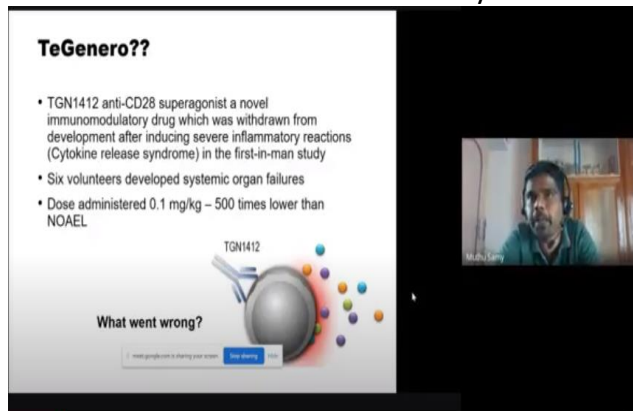
A talk on "Mitochondrial Protein quality control in Cardioprotection" been delivered by Dr. Venkatesh Sunderarajan, on 14<sup>th</sup> Aug 2020. A total number of 134 participants, including scholars, faculties, external invitees and students were benefitted. Resource person: Dr. Venkatesh Sunderarajan, Assistant Professor, Rutgers - New Jersey Medical School, USA. The resource person, being the Alumnus of JSS CPO, been greeted by Dr SP Dhanabal. The delegates were shortly briefed about the resource person by Ms Priyadarshini. Dr Venkatesh, narrated his research findings and forecasted the role of mitochondrial proteins in cardio protection. He expressed his sincere thanks to JSS CPO for being an inspiration for his research journey. The brainstorming session ended with vote of thanks by Mr G Ramu.



## **Biologics Era,: Are we (Pharmacists) ready to conquer? (Dt. 13 Aug 2020)**

**Dr Rajendiran K, Convener**

A talk on “Biologics Era,: Are we (Pharmacists) ready to conquer?” been delivered by Dr. VS Muthusamy, on 13<sup>th</sup> Aug 2020. A total number of 180 participants, including scholars, faculties, external invitees and students were benefited. Dr. VS Muthusamy, Associate Director – Clinical Development, Novartis Health Care PVT Ltd, Hyderabad. The resource person, being the Alumnus of JSS CPO, been greeted by Dr SP Dhanabal. The bio sketch of the resource person was shared by Ms Priyadharshini. During his course of presentation, Dr Muthusamy, well educate the students, the future pharmacist about their role in conquering against COVID 19 pandemic disease. He was excited being a resource person, back to his home institute. The brainstorming session ended with vote of thanks by Dr B Duraisamy.



## **Webinar on Dynamic Vapor Sorption- A strategic tool to understand the hydration behavior in drug (18 Aug 2020)**

**Dr Rajendiran K, Convener**

A talk on “Dynamic Vapor Sorption- A strategic tool to understand the hydration behavior in drug” been delivered by Dr.Vasanth Sekar, on 18<sup>th</sup> Aug 2020. A total number of 114 participants, including scholars, faculties, external invitees and students were benefited. Resource person: Dr. Vasanth Sekar, Scientist – Onco formulation, Hospira-Pfizer Ltd. Chennai. The resource person, being the Alumnus of JSS CPO, been greeted by Dr SP Dhanabal. The gathering begun with the genesis of Webinar and the delegates were briefed about the resource person by Ms Priyadharshini . The content been delivered with high spirit and the delegates, especially the post graduates from Pharmaceutics department interacted well. The brainstorming session ended with vote of thanks by Mr G Ramu.

## **A webinar on “Blood clots and COVID 19” (Dt. 20 July 2020)**

**Dr. P R Anand Vijayakumar,**

**Coordinator**

A webinar on “Blood clots and COVID 19” was organized on July 20, 2020 at 10 am. The resource person was Dr. Saravanan Subramaniam, Research Scientist at Blood Center of Wisconsin Blood Research Institute, Scientist-I, Milwaukee. He described about how blood clots are formed in patients with COVID 19 and how it can be prevented. He also explained about the blood groups which are prone to blood clot. Around 460 participants had registered for this webinar. This was started with introduction by Dr. T K Praveen, speaker was introduced by Dr. P R Anand Vijayakumar. All the faculty of Pharmacology department were present during the webinar. Among 460 participants 346 were students of B pharm, M Pharm, Pharm D, Pharm D intern and Research scholars and 72 were faculty and remaining 45 were from medical, non-pharmacy and industry. The registered participants were not only from various colleges all around India, but also from other country.

The webinar was well-received by all the participants. After the webinar, there was a Question answer discussion for about 30 minutes. Vote of thanks was delivered by Dr. R Vadivelan.

## **A webinar on “COVID- 19 & Neurological complications” (08 Aug 2020) Dr. A. Justin, Coordinator**

Department organized a webinar on “COVID- 19 & Neurological complications” on August 08, 2020, at 11 am. The resource person was Dr. V. Arul Selvan MD., DM., MRCP (UK), FRCP, Consultant Neurologist, Royal Care Super Specialty Hospitals, Coimbatore. He had detailed about current scenario of COVID-19 across the global and its pathology, sign, symptoms and precautionary measures.

Dr Arul Selvan elaborated about impact of SARsCoV-2 virus on nervous systems and associated disorders. He also explained about management of chronic neurological disorders with COVID-19 infective patients. He also discussed about the advantageous of using corticosteroids and other medications in the treatment of COVID-19 infected Parkinsonism and Guillain-Barré syndrome (GBS). Around 850 participants registered for this webinar and it was well received by all the participants.



## **AICTE, New Delhi & JSS AHER, Mysuru Sponsored Virtual Pre satellite Workshop and Two days National Conference on Genotoxic Impurities in Essential medicine-Impact on Public Health and Current Regulatory Challenges (10-12 Nov 2020)**

**Coordinators: Dr. M R Jeyaprakash/Dr. N. Krishna veni**

This workshop was designed to provide a constructive idea to the presence of genotoxic impurities in pharmaceutical formulations and creating awareness about its impact on the health of public in terms of coining their knowledge with modern science and recent advancements in clinical practice. The lectures organized were directly delivered to the knowledge holders and to the budding researchers and on other hand it directly imparted knowledge about the current regulatory challenges in this field.

Pre- Satellite Workshop and Two Days National Conference was inaugurated by Dr. B Manjunatha , Registrar, JSSAHER and delivered the special address. Dr SP Dhanabal, Principal delivered Presidential address and highlighted the JSSCPO activity during this pandemic conditions. He also stressed the importance of conference in worldwide scenario.

The Pre-satellite workshop was organised on the topic “Applications of LCMSMS and Trouble Shooting techniques in LCMSMS” by Dr. B. Babu where in a virtual video on the working and application of LC-MS/MS was discussed in detail.

The second and third day of the conference was organised through virtual mode with various lectures by eminent speakers from academic institutes, Industries and Indian Pharmacopeial Commission, Ghaziabad on various current topics related to impurity profiling and genotoxic evaluation of impurities.

A total of about 53 abstracts from all over India was received for the oral and poster presentation and at the end of three stage screening 38 abstracts were categorized for poster presentation and 15 have been shortlisted for oral presentation. The oral and poster presentations were evaluated by a panel of evaluators constituting members from academia and industry. The best oral and poster presentations were awarded with certificate of merit and cash prize.



## Live webinar on “Impact of Artificial Intelligence in Drug Discovery” (10 July 2021)

**Coordinators: Dr. Afzal Azam, Dr. Gomathi S & Dr. B. Gowramma**

The inaugural function of live webinar on Impact of Artificial Intelligence in Drug Discovery was organised in JSSCPO on 10 July 2021. Dr. Afzal Azam, Vice Principal welcomed the speakers, Dr. M. Karthikeyan, Senior Principal Scientist, CSIR-National Chemical Laboratory, Pune and Dr. Girinath Pillai, Director, Zastra Innovations, Bengaluru. Dr. R. Kalirajan and Dr. S. Jubie introduced the speakers to the delegates.

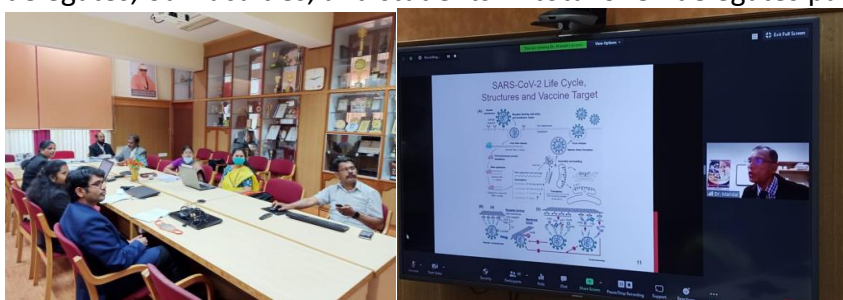
The sessions began with Sustainable Development Goals for Health: Application of Artificial Intelligence in Drug Discovery elaborately discussed by Dr. M. Karthikeyan and Role of ADME, P450 and Toxicity in the Drug Candidate Selection: An AI Approach discussed by Dr. Girinath Pillai. Both speakers were also addressed various questions of delegates, our faculties and students. A total of 354 delegates participated in this webinar.



## Live Virtual Conference on “Green Approaches in Medicinal Chemistry for Sustainable Drug Design and Synthesis (9<sup>th</sup> April 2021) Coordinators: Dr. Afzal Azam & Dr. B. Gowramma

The inaugural function of Live Virtual Conference on Green Approaches in Medicinal Chemistry for Sustainable Drug Design and Synthesis was organised in JSSCPO, sponsored by JSS AHER, Mysuru on 09 April 2021. Dr. S P Dhanabal, Principal welcomed the speakers, Dr. Manas Mandal, Fulbright Specialist, Associate Professor, Roseman University of Health Sciences, USA, Dr. Ravikumar M, Senior Scientist & Founder, Immunocure, Hyderabad and Dr. Sudarsan Pandiyan, Senior Scientist, Schrodinger, Bangalore. Dr. R. Kalirajan, Dr. S. Jubie introduced the speakers to the delegates.

The sessions began with Not so green, but effective vaccines for COVID-19 abundantly discussed by Dr. Dr. Manas Mandal, Green chemistry coupled with computational and AI approaches in developing new broad spectrum anticancer compounds discussed by Dr. Ravikumar M and Understanding chemical reactions using computers discussed by Dr. Sudarsan Pandiyan. All the speakers were also addressed various questions of delegates, our faculties, and students. A total of 84 delegates participated in this webinar.



## **12. COLLABORATIVE ACADEMIC ACTIVITIES WITH ACADEMICIANS / INDUSTRIAL EXPERTS / ADJUNCT FACULTY**

**Dr. Rajashekara Chakravarthi** Chief Nephrologist, STAR Hospitals, Hyderabad ~~has delivered~~ 4 subject seminars, five case presentations in the department of Nephrology and has initiated BEMAKI study which is the first Multicentric Nephrology study in India.

**Dr. Uthappa M.** Consultant Nephrologist and Transplant Physician Columbia Asia Hospital Mysuru ~~has delivered~~ 4 subject seminars and 3 case presentations.

**Prof. Nagaraj Desai**, Professor of Cardiology, Plot No p. 31/V, Seethappa Layout, off BEL Road, RMV 2<sup>nd</sup> Stage, Bangalore, he is involved in research on ECG analysis of JSS – iMEDRICKS NOVEL LEAD study SURF investigators INDO-EUROPEAN MULTINATIONAL study for secondary prevention practice Jointly sponsored by Lipid association of India ECG COURSE – A PRIMER on 5<sup>th</sup> January, 2020 CCA: Faculty Biostatistics course; April 28-30<sup>th</sup>, 2020. There are 6 publications along with adjunct faculty from the department of Cardiology

**Dr. Mohan K Issac**, Professor of Psychiatry, Level 7, T Block, Fremantle Hospital, 1, Alma Street Fremantle WA 6160, Australia. There are 5 research publications along with adjunct faculty from the department of Psychiatry.

### **Dr. Jayarama S Kadanadale**

Professor and Head Clinical and Molecular cytogenetics Centre for Human Genetics Biotech Park, Electronic city Phase I, Bangalore 560100.

- Dr. Jayaram visited the genetic laboratory at JSS Hospital on 06-06-2020. He inspected the infrastructure established at the laboratory for initiating the cytogenetic testing and gave his expert advice to improve it further. He also provided us with the list of documents required to be maintained in the laboratory which will further help us to apply for NABL accreditation. He also interviewed the research assistants to assess their interest and knowledge with respect to cytogenetics. Overall, his visit was very fruitful, and we look forward to working with him and take the genetics laboratory to the next level.
- He has guided and provided expert advises during the process of standardization of the karyotype protocol.
- In the process of establishing the cytogenetics laboratory at JSS hospital he facilitated the appointment of Dr. Sairam who is efficient in handling the cytogenetics section in the Medical Genetic Laboratory.
- All the samples processed for karyotyping are being reviewed by Dr. Jayaram.

### **Prof. Dhavendra Kumar**

Honorary Senior Research Fellow, Institute of Medical Genetics, Division of Cancer & Genetics, Cardiff University, University School of Medicine, UK.

- The Genomic Medicine Foundation UK (GMF-UK)
- and the JSS Academy of Higher Education & Research, Mysuru, Karnataka, India (JSS AHER-Mysuru) entered into a Memorandum of Understanding (MOU) on June 12, 2020. The Genomic Medicine Foundation is a non-profit organization providing up to date and evidence-based information on genetics/genomics relevant to



clinical medicine and healthcare. The objectives of the MoU are to set-up joint education and training programs, to have student and faculty exchange programs, to formulate multi-centric collaborative research projects, and to advance the genetic clinical facility at JSS Hospital, Mysuru. In this regards, Prof. Dhavendra Kumar, Medical Director/CEO from GMF-UK and Dr. Manjunatha B, the Registrar of JSS AHER signed the MoU in the presence of Dr. Surinder Singh, Vice-Chancellor, Dr. P.A. Kushalappa, Director (Academics), Dr. H. Basavanagowdappa, Dean, Faculty of Medicine, Dr. M.N. Suma, Dean, Faculty of Biomedical Sciences, Dr, Vishal Kumar Gupta, Dy. Director (Academics), Dr. Prashant Vishwanath & Dr. Akila Prashant, Professors, Department of Biochemistry & Department of Genetics, JSS AHER.

- Online meeting held with Dr. Dhavendra Kumar, Genomic Medicine Foundation UK on 16<sup>th</sup> December 2020 at 3.00 pm through zoom platform.

The following agenda were discussed.

**1. Plan the lecture series for the MSc Medical Genetics and Genomics students**

Eight topics for the lecture series for MSc Medical Genetics and Genomics students were planned from the second week of January 2021. These topics will be delivered by faculty from JSS AHER and GMF UK, 1 topic per week on Saturday afternoon's 3 pm to 4 pm IST.

**2. Possibility of conducting Indo-UK collaborative webinar in March or April**

The topic of the webinar was decided to be "Cancer Genomics". However, the detailed agenda was thought to be discussed at a later date.

**3. Discuss the research areas which could be taken up as collaborative projects**

Based on the inputs provided by Dr. Akila & Dr. Kiran and as advised by Prof. Dhavendra Kumar the group decided to start working on the following topics to take the research to the next level at JSS.

- BRCA1/BRCA2 profiling breast cancer/ ovarian cancer/
- Triple-negative breast cancer- genomic profiling
- Prostate cancer genetics
- Lung cancer-small cell/ non-small cell genomic profiling.

Dr. Giriraj Chandak, Senior Principal Scientist (Scientist-F) and Group Leader, CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad had visited our Institute on 31<sup>st</sup> December 2020.

- A project proposal that was submitted to the Department of Biotechnology (DBT) for the establishment of NIDAN Kendra and for the Screening of Pregnant Women and Newborns in the District of Mysuru and Nilgiris for a total amount of Rs. 590 Lakhs was discussed with him in detail. This proposal was critically reviewed by Dr. Chandak.
- He delivered a guest lecture to the MSc Medical Biochemistry and MSc Medical Genetics and Genomics students on "Simple to complex disorders: A fascinating journey". The session was attended by about 40 students who were more than excited to interact with Dr. Chandak and clarify their doubts. They also discussed with him their future scope and prospective.  
Dr Giriraj also reviewed the progress in the work of the PhD scholars and provided his valuable inputs and suggested modifications. He also reviewed the proposals of the faculty and provided suggestions to make it appeal so that it attracts funds by the funding agencies.



He visited the genetic laboratory at JSS Hospital and provided his inputs regarding the infrastructure and the basic tests which can be performed with the currently available instrumentation. He has also offered to provide internship to Ms. Haripriya, 3<sup>rd</sup> semester student of MSc Medical Genetics and Genomics program in his laboratory on the protocols that can be later standardised in our set-up in the initial phases.

On the whole the discussion was fruitful and will definitely benefit us to carry out the above mentioned studies.

**Dept. of Pharmacology:**

Mr. Jestin V. Thomas, Director, Leads Clinical Research and Bio services Pvt. Ltd, Bengaluru

**Purpose & Outcome**

1. Conduct of clinical / preclinical trials at JSS Medical College & Hospital
2. Exchange of facilities and expertise for collaborative or independent research and publications based on the policies of both entities,
3. Joint Academia-Industry clinical research training programs,
4. Conduct of National and International seminars and workshops,
5. Collaborative research proposals for various funding agencies, Research leading on to Ph.D.

**Nephrology: Bharath Electronics Limited**

**Purpose & Outcome**

Engineers from BEL visited dialysis unit JSS Hospital, Mysuru, to study the indigenous dialysis machine

Dated : 20-01-2021



### **13. STUDENT EXCHANGE PROGRAM**

Mr. Meher Cheran from American International Medical University, St Lucia completed his observership at JSS Hospital in the department of Nephrology, Gastroenterology and Emergency Medicine each for a duration of 04 weeks between 11/01/2021 to 8/04/2021. He received a Certificate by Dr.H.Basavana Gowdappa, Principal, JSS Medical College for successfully completing Observership at JSS Hospital.



#### **International student visit:**

1. Mr. Poyodi Kola, Research Scholar, University of Lome, Togo visited Department of Pharmacology for a period of 03 months from 03.02.2021 under the supervision of Dr. S. N Manjula, Professor and Head under TWAS short term fellowship 2019.
2. Dr. M P Venkatesh, Dr. Balamuralidhara V, & Dr. M P Gowrav participated in WHO Training Programme on 'WHO Prequalification Virtual Workshop for manufacturers of IVDs (Medical Devices)' from 05<sup>th</sup> to 09<sup>th</sup> July, 2021.

#### **MOU Between JSSAHER , Curaden & LaTrobe University, Melbourne, Australia.**



MOU has been signed between JSSDCH- A Constituent college of JSSAHER, Mysore & Curaden, AG Switzerland. Curedan will train students & faculty on Preventive Dentistry.

A Decade of Collaboration between JSS Academy of Higher Education and Research, Mysuru and LaTrobe University, Melbourne, Australia. The delegation from La Trobe University included Prof. Kerri Lee Krause - Deputy Vice Chancellor (Academic) & Vice – President, Mr. Kelly Smith - Pro Vice Chancellor for International and Mr. Amit Malhotra, Regional Director - South Asia and Africa, La Trobe International. The meeting focused on the enhancing the collaboration between the institutions to advance quality and nurture excellence to provide students an amazing education with a global vision.



## 14. FELLOWSHIPS AND AWARDED

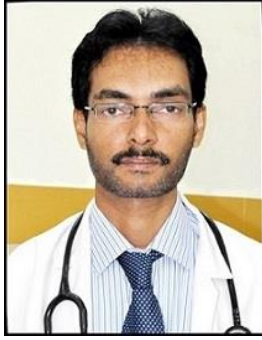
### Presentation Award La Trobe Diabetes Research Symposium 2020

The Department of Physiology, Anatomy and Microbiology and Department of Public Health, College of Science, Health and Engineering, La Trobe University, Australia had conducted La Trobe Diabetes Research Symposium with the aim to share diabetes related research currently happening at La Trobe and to network with other Diabetes researchers across the university. This symposium was held on 9th November 2020 via zoom from 10 AM to 2 PM (AEDT) i.e, 4:30 AM to 8:30 AM (IST). A wide number of researchers had participated in this symposium from various departments and shared their research ideas on current challenges to the recent advancements in the management of diabetes. Dr. Rahul Krishna Puvvada, PhD Research Scholar under La Trobe and JSS AHER combined PhD program participated in the presentation titled “Self-medication practices among people living with type 2 diabetes in India - A Systematic Review”. Following the presentations, the speakers were involved in the question and answer section where they interacted with other researchers and answered their questions. Lastly, the symposium was ended with prize distribution for the best presentation and best discussion point. It was our pleasure to inform you that Dr. Rahul Krishna Puvvada awarded with the best presentation.



### COVID 19 TELEMEDICINE VOLUNTEERING

In a bid to empower people in the fight against COVID-19, Sri B.S. Yediyurappa (Hon’ble Chief Minister, Govt. of Karnataka) on 22nd April, launched Apthamitra - a Telemedicine helpline for the state. The helpline was set-up in three different locations – Bengaluru, Mysuru, and Mangalore; with the joined hands of Infosys, Concentrix and HCL. The main intention behind launching the helpline was to reach out to people and to help them identify influenza-like illness (ILI), Severe Acute Respiratory Infection (SARI), COVID-19-like symptoms, or having a high risk of getting infected. The platform was intended to identify persons with low risk but having some symptoms similar to COVID-19 and provide them telemedicine support with over-the-counter medicines and counsel them about the need to go through self-quarantine. It aimed at following up on all low-risk cases until they get cured. In addition to this, it aims at assessing those having medium to high risk of infection and getting them to fever clinics or screening centers for testing and treatment. Apthamitra had a two-tier system wherein the first tier was managed by final-year volunteers (students) from Pharma, Ayush, and Nursing courses while the second was looked after by MBBS/Integrated Medicine and Ayush volunteer doctors connecting from their respective locations for risk management, counseling, telemedicine and referral for testing and treatment. Mr. Suraj S (II M.Pharm – Industrial Pharmacy), Ms. Vaishnavi S (II M.Pharm – Pharmacology), and Ms. Nirma (II M.Pharm - Pharmacology) worked as Tier 1 volunteers, by counseling the callers as per the diagnostic protocols given and updated the case through the CRM portal for a telemedicine doctor consultation. They were also involved in outbound campaigns where they tele-screened pediatrics, geriatrics, expecting and lactating mothers, incoming travelers from other countries, and other citizens who were at higher risk of infection.



Dr Manthappa M  
Associate Prof. Dept of Medicine  
FSCAI: Society of Coronary Angiography



Dr. Manjappa M  
Associate Prof. Dept. of Cardiology  
ESC (European Society Of Cardiology) Fellowship award  
in December 2020



Dr.Akkamahadevi P., Professor, Dept. of Anaesthesia  
awarded IAPM Fellowship Exit exam (Indian Academy of  
Pain Medicine) at MS Ramaiah Advanced Learning Centre,  
Bangalore on 10<sup>th</sup> January 2021.



Dr. Anupama Pandey., Asst.Professor, Dept. of  
Pediatrics awarded Post Doctoral certificate in  
Neonatology at Sanjay Ghandi Postgraduate  
Institute of Medical Sciences Lucknow India



Dr Deepa Bhat., Asso.Professor, Dept. of Anatomy awarded  
Level 2 Genetic Counsellor, Board of Genetic Counselors of  
India at Kamineni Hospital, L B Nagara, Hyderabad



Dr Smitha MC, Assistant Professor, Dept. of Community  
Medicine is awarded Fogarty's Global Health Equity  
Scholars Post Doctoral Fellowship, National Institutes of  
Health, United States

**15. DETAILS OF FACULTY ATTENDED INTERNATIONAL CONFERENCES/ WEBINAR/ TRAINING PROGRAMS:**

<b>Name of the faculty</b>	<b>Designation</b>	<b>Details of conferences/ workshops/ seminars attend</b>	<b>Date &amp; Place</b>
Dr. Juny Sebastian, Pharmacy Practice	Assistant Professor	International Conference on Pharmacoepidemiology - ICPE All Access	16- 09-2020 to 17-09-2020 International Society of Pharmacoepidemiology - Online
Dr. Juny Sebastian, Pharmacy Practice	Assistant Professor	International Conference on Pharmacoepidemiology - ICPE All Access	16- 09-2020 to 17-09-2020 International Society of Pharmacoepidemiology - Online
Dr. Juny Sebastian, Pharmacy Practice	Assistant Professor	Virtual ISPOR Asia Pacific	2020 14-09-2020 to 16-09-2020
Dr. Juny Sebastian, Pharmacy Practice	Assistant Professor	Virtual ISPOR Asia Pacific	2020 14-09-2020 to 16-09-2020
Dr Juny Sebastian	Assistant Professor	Webinar of COVID-19 Vaccine organised by Saudi Kerala Pharmacist's Forum	26/03/2021 Kingdom of Saudi Arabia
Dr U R Rakshith	Lecturer	The value of Cochrane Library	14/04/2021 online
Ms. Mahalakshmi A M	Assistant Professor	7 <sup>th</sup> international workshop on Food and Brain Health	7/04/2021 to 8/04/ Sultan Qaboos University, Oman 2021
Dr. Juny Sebastian	Assistant Professor	International Faculty Development Program (iFDP) on Emerging trends in Pharmaceutical Research	20/03/2021 to 15/05/2021 Online
Mrs. Shilpa Palaksha	Associate Professor	RAKCOPS International e-Conference on Drug Development 2021 (RAKCOPS-ICDD 2021)	23/05/2021 -24/05 /2021 Online
Dr Sri Harsha Chalasani	Assistant Professor	RAKCOPS International e-Conference on Drug Development 2021 (RAKCOPS-ICDD 2021)	23/05/2021 -24/05 /2021
Dr. Ann Vazhayil Kuruvilla	Lecturer	Virtual ISPOR 2021	17/05/2021-20/05/2021 Online

Dr Acsah Annie Paul	Lecturer	Online course on Introduction to Pharmacovigilance	13/05/21 Online from UMC Online
Dr. Shailesh T	Lecturer	Product-Specific Guidances: Lighting the Development Pathway for Generic Drugs Webinar	05/05/2021 Online, USFDA
	Lecturer	Common Labeling Deficiencies and Tips for Generic Drug Applications	07/05/2021 Online, USFDA
Dr. Sheshagiri Dixit	Lecturer	Drive High Quality and Fast Extraction of Critical Information from Patents with Reaxys	02/06/2021 Elsevier
Dr. Chandan R S	Associate Professor	Drive High Quality and Fast Extraction of Critical Information from Patents with Reaxys	02/06/21 Elsevier
		Method Development in Flash Purification	16/06/2021 Phenomenex
		Latest Approaches in SPE and LC For Improving Bioanalytical Methods	21/6/2021 Phenomenex
		Webinar on teaching strategies and technology solutions - do they align with what you need? Organised by D2L, Canada	29/06/2021

**16. TRAINING/ CME / SEMINAR / CONFERENCE /ETC. ATTENDED BY THE FACULTY**

Department	State/Regional	National	International
Anatomy	63	103	21
Physiology	14	38	11
Biochemistry	19	46	37
Pharmacology	36	07	--
Microbiology	29	15	2
Pathology	10	5	5
Comm. Medicine	68	38	22
Forensic Medicine	15	15	4
General Medicine	86	6	1
Geriatrics	2	0	0
Respiratory Medicine	9	14	4
Surgery	14	26	9
O.B.G.	8	179	11
Paediatrics	26	30	0
Orthopaedics	18	8	5
Radiology	4	38	13
E.N.T.	8	20	2
Anaesthesia	56	25	0
Ophthalmology	13	10	3
Dermatology	14	15	0
Psychiatry	31	32	2
Hospital Administration	7	3	1
Emergency Medicine	22	1	0
Cardiology	3	52	0
Nephrology	5	20	6
Urology	8	22	8
CTVS	10	14	3
Gastroenterology	0	7	4
Rheumatology	4	8	0
Paediatric Surgery	0	1	1
Clinical Psychology	0	1	1
<b>Total</b>	<b>602</b>	<b>799</b>	<b>176</b>

**17. GUESTS LECTURES / TALKS DELIVERED BY FACULTY IN INTERNATIONAL WORKSHOPS/  
CONFERENCES**

<b>Name of the Faculty with Designation</b>	<b>Name of the Institution/Company</b>	<b>Place of the Institution/ Company</b>	<b>Topic of the Guest Lecture Delivered</b>	<b>Date of the Guest Lecture Delivered</b>
Dr. Nagashree K.S. Lecturer	International pharma conference ( Pharma - 2020 online) on	<b>Online</b>	Speaker	27/08/2020
Dr. Juny Sebastian Assistant Professor	Department of Pharmacovigilance and Clinical trials at Botswana Medicines Regulatory Authority (BoMRA)	Gaborone, Botswana	Causality Assessment of Adverse Events Following Immunisation	23/2/2021
Dr. Saravana Babu C Professor	7 <sup>th</sup> International workshop on Food and Brain Health organized by Sultan Qaboos University,	Oman	Evaluation of Neuroprotective effects of polyphenol enriched blueberry in sleep restricted animals	7/04/2021
Dr Juny Sebastian Assistant Professor	3 Analytics	USA	Safety Surveillance of COVID-19 Vaccination: An experience from a Tertiary Care Teaching Hospital	16/05/2021

## 18. SERVICES TO THE COMMUNITY THROUGH PARTNERSHIP & COLLABORATION

As the pandemic situation warranted explicit awareness among tribal people of Nilgiris, JSS College of Pharmacy, Ooty collaborated with the district Govt. administration to enable adaptive management of safety measures for COVID 19. Accordingly the faculty and staff volunteers have distributed gratis hand Sanitizers and Kabasura Kudineer Chooranam to more than 850 families in 10 tribal villages of Nilgiris district to raise their awareness on COVID19 prevention. Tribal villages selected were, Anaikatti, Siriyur, Valaithottam, Kollimalai, Nedugalkombai, Veerakombai, Kothagiri-Kookal, Thiruchikadi, Kunda-Kothagiri, Kolikarai from three major routes namely Siriyur, Coonoor and Kothagiri respectively. The Hand Sanitizers were supplied by Ethidrugs Research Lab Private Ltd, Puducherry at subsidized rate for 1000 (200 ml) bottles along with 100 complimentary bottles. Likewise, The Gtee Botanical Extract Private Ltd, Chennai, donated 1095 (50 gms) packets (worth of Rs 1.36 Lakhs) of Kabasura Kudineer Chooranam. The following society impacting events was delivered to commemorate Jayanthi Celebration of Jagadguru Dr Shivarathri Rajendra Mahaswamiji.



Dr. S P Dhanabal, Dr. Jaganathan and members of Jayanthi celebration committee discussing with Ms. Innocent Divya, Honorable Collector, Nilgiris regarding distribution of Hand sanitizers and Kabasura kudineer chooranam at selected Tribal villages. Dr. S P Dhanabal, Members of Jayanthi celebration committee and staff from various JSS Institutions- COVID-19 Awareness along with distribution of Hand sanitizers and Kabasura kudineer chooranam by faculty of JSS Institutions, Ooty

**Distribution of Certificate of appreciation and Cash prize to the student achievers by Ms. Innocent Divya, Honorable District Collector, Nilgiris.**



**Principal-JSSCPO addressing the student achievers and their parents regarding achievements of Dr. Rajendra Mahaswamiji at JSSCPO**

**Financial assistance to build COVID-19 special ward in Govt. Hospital, Ooty. Dr. S P Dhanabal, Principal issuing the Cheque of Rs. 5,00,000/- to the Medical Superintendent Govt. Headquarters Hospital, Ooty in presence of Ms. Innocent Divya, Honorable District Collector, Nilgiris**

World pharmacist Day was celebrated, and the pharmacist oath was pledged by staff and students of JSS College of Pharmacy, Ooty on 25th September 2020, in association with Indian Pharmaceutical Association (IPA), Nilgiris branch. Members of IPA distributed pamphlets to the practicing pharmacists and the general public to create awareness for proper usage of medicine. To commemorate World Pharmacist Day, 2020, the Indian Pharmaceutical Association (IPA), Nilgiris branch organized two virtual contests for the students and faculty viz., 'Collage making virtual contest' and 'Virtual project contest'. Certificates have been distributed to all the participants, and selected winners are awarded a cash prize

## 19. PERSONALITY DEVELOPMENT & COMMUNICATIONAL SKILLS FOR STAFF & STUDENTS WITH PARTNERSHIP

ARIVU” Professional who strives for excellence & follows the pedagogy of active learning i.e. experiential learning. conducted the workshop



The interactions were helpful to the students, they enjoyed the sessions. At the end of the workshop, students were trained to carry away three things like teamwork, assertiveness & attitude in behavioural management to use proper words & appropriate body language with the right tone.





## 20. INTERNSHIP /PLACEMENT AND PARTNERSHIP

The students of Department of Health System Management Studies ,JSS AHER are encouraged to take up an internship in various health care internship is short projects which are assigned to students who work on real time employee shoe to learn work experience or it may be a research approach which is a challenge to the organization in terms of solution management, or it can be a group project to take up a study on an area of improvement where the students can contribute after research deliberation on improving area understudy for bettering services. Some of the health care organization where our students have worked on an internship



The Department of Health System Management Studies also has placement co-ordinator and committee which gives placement assistance to the final year of students. Students of (2020-2021) batch were placed at different hospitals in and around Karnataka with designations ranging from Hospital co-ordinator, NEBH coordinator, Customer Relationship Management, Manager, Floor coordinator, Nursing staff, Human Resource Manager, Front office executive, and Medical officer of the day and more than 70% (2020-2021 batch) of the students have been placed across all the sectors in health



## Industry visit, Hospital visit, and interactive learning

Industrial visit program is spread across the curriculum at regular intervals where the students are taken to various health care set to understand the various organization, their approaches, mission, vision, organization plan, problems and their prospects which an administrator be aware off. Students and Staff visit to various health care organisations.

Job Opportunity for Pharmacy Graduates : Interaction Session by Mr Biju Thomas, Head: Injectable Manufacturing Operations, Mylan Laboratories, Bengaluru on 22 March, 2021



Career Opportunities Talk By Dr JSK Nagarajan on 20 March, 2021



## **21. COLLABORATIVE OUTCOMES -TEACHING , LEARNING, RESEARCH, TRAINING**

**JSS AHER internationalization strategy** refers to strengthening of the **JSS AHER's** academic research position, and constant improvement of the quality of education while providing favourable conditions for the education of people with outstanding talents. JSS AHER has a long and proud history as an internationally focused institution. In developing its strategic imperatives, it is guided by a fundamental purpose, common to all research-led institutions, to create and disseminate knowledge. It is also committed to the advancement of knowledge through the leadership, guidance and inspiration of its community of scholars and educators. This strategy sets out how it propose to build on that strong international tradition and reputation to ensure that it is the best positioned to contribute and thrive in the years ahead.

Globalization is a continuous process. It is set to bring new opportunities and new challenges for the next generations of graduates and seeker academicians to prosper in and contribute to an increasingly interdependent world. It will also bring big new markets for providers of higher education, yet significantly greater competition and greater potential volatility. The implications of the increasing pace of technological innovation are likely to be profound. They include a huge shift in demand for 'borderless' education. We are likely to be carrying out our future range of international academic activity in a global environment. This will mean that we must be able to respond quickly and be flexible to perceived or actual barriers to internationalization.

This internationalization strategy sets out how we intend to deliver on our aspiration of becoming a place of first choice in the minds of the world. We will see enhanced resources so that we can offer our students continually improved learning and living experiences and can make the investments that we need to make to develop our broad ranging and cutting-edge research agenda over the coming years. We are already a strong, internationally engaged and respected University. We have set ourselves a broad-ranging and ambitious goal that will build on these strengths but require strong commitment, engagement and ingenuity from all of us to get there. JSS AHER is quick and flexible for the ever-increasing pace of change globally. Our values enshrine academic freedom, integrity and accountability, sustainability, critical thinking and intellectual creativity. As one of the top most universities in India, we pride ourselves on being an inclusive and welcoming international community.

### **JSS AHER Aspiration**

JSSAHER aims to become a place of choice in the minds of the world. This aspiration puts increasing our international reputation for quality – in learning, research and knowledge

transfer – at the heart of our future activity. We want to develop further our relationships with the best international universities across this spectrum of activity. Enhancing our international reputation should create a virtuous circle, building further and bigger opportunities for international research partnerships with other world class universities and institutions worldwide; enhancing our ability to shape and secure increased levels of international research funding; attracting the best minds to work with us (whether to learn, research or develop commercial opportunities); increasing our ability to secure. In further developing our international profile and reputation, the JSS AHER places particular emphasis on;

- To promote our international capabilities and values in target countries and to key audiences.
- To meet the international aspirations of all our students and support the implementation of the international aspects of our Learning and Teaching Strategy
- Producing research of international impact and significance, shaping the ways in which the world is seen and understood
- Welcoming the most able students, teachers, and researchers from across the world, and celebrating diversity in culture and perspective
- Enabling students and staff to engage international cultures to further their personal and professional development
- Educating students to become informed and responsible citizens and supporting them as alumni to make leading contributions internationally
- Promoting partnership with international universities, funding bodies and other private and public organizations
- Supporting the social, cultural and economic interests of the city and region through the University's international expertise and engagement

## International Collaboration - 21

Sl. No.	Name of Institution / Organization
1.	OMAN Medical College Sultanate of OMAN
2.	Southern Illinois University Edwardsville (SIUE), USA
3.	University of North Carolina (UNC), USA
4.	Charite – Universities Medicine Berlin Germany
5.	Maastricht University, Netherlands
6.	Roseman University of Health Sciences, College of Pharmacy Henderson, Nevada, USA
7.	Institute for Global Public Health Frank H. Netter MD School of Medicine Quinnipiac University, USA
8.	The University of Warwick, UK
9.	Texas Southern University, USA
10.	Pacific University, Oregon, USA
11.	UCSI University, Malaysia
12.	PII Tech, USA
13.	JSS Academy of Higher Education and Research (Mauritius)
14.	Cincinnati-Mysore sister city Organization, USA
15.	United States Pharmacopoeia (USP), USA
16.	The Genomic Medicine Foundation UK (GMF-UK)
17.	University of Maryland, Maryland, USA
18.	The University of Chester, United Kingdom
19.	Albany College of Pharmacy and Health Sciences, USA
20.	Sunway University, Malaysia
21.	Cyberjaya University College of Medical Sciences (CUCMS) Malaysia

## National Collaboration- 41

Sl. No.	Name of the Institution / Organization /Industry / Hospital
<b>Industrial Collaborators - 16</b>	
1.	Nesa Med Tech Pvt, Ltd, Bangalore
2.	Quantumzyme LLP, Bangalore
3.	Innov4sight Health & Biomedical Systems Pvt. Ltd - Bangalore
4.	Innovative Nano & Micro Technologies Bangalore
5.	Gulbrandsen Technologies (India) Pvt. Ltd
6.	Skanray Technologies Private Limited
7.	Imaginarium (India) Private Limited, Mumbai
8.	Seragen Biotherapeutics Privat Limited, Bengaluru.
9.	GlaxoSmithKline Asia Private Limited, Bengaluru
10.	Accreate additive labs private limited, Bengaluru
11.	Triphase Pharmaceuticals Pvt Ltd, Mysuru
12.	Scitus Pharma Services Pvt. Ltd. Chennai
13.	Jagdale Industries Pvt. Ltd (Juggat Pharma), Bengaluru
14.	The Sadvaidyasala (B V Pundit's Traditional & Herbal Healthcare), Pvt., Ltd, Nanjangud

15.	Embiotic Laboratories Private Limited, Bengaluru (ELPL)
16.	Denovo Biolabs Pvt. Lt. Bengaluru
<b>Hospital Collaborators - 04</b>	
1.	Global Health City, Chennai
2.	VGM Hospital Coimbatore
3.	Apollo BGS Hospital, Mysuru
4.	Narayana Health Multispecialty Hospital, Devanur, Mysuru
<b>Institute/Organization Collaborators - 17</b>	
1.	JSS College for Women, Saraswathipuram, Mysore
2.	Defence Research Development Organization (DRDO), New Delhi
3.	Institute of Applied Dermatology (IAD) Kasargod
4.	National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bangalore
5.	Swami Vivekananda Youth Movement, Mysore
6.	JSS College of Arts, Commerce & Science, Ooty Road, Mysore
7.	JSS College of Physiotherapy, Mysuru
8.	JSS Academy of Technical Education, Noida
9.	Farooqia College of Pharmacy, Mysuru
10.	St. Philomena's College Mysuru
11.	JSS College of Nursing, Mysuru
12.	Mission Spine Foundation, Pune
13.	Defence Food Research Laboratory, (DFRL) Mysuru
14.	St. Peter's Institute of Pharmaceutical Sciences, Warangal Urban, Telangana
15.	Consortium of Accredited Healthcare Organizations (CAHO), New Delhi
16.	SPB Physiotherapy College, Surat
17.	JSS Institute of Naturopathy & Yogic Sciences, Coimbatore
<b>University Collaborators - 04</b>	
1.	NMIMS University, Mumbai
2.	Gujarat Forensic Science University, Gujarat
3.	Yenepoya, Mangaluru.
4.	Raksha Shakti University, Ahmedabad, Gujarat

## The outcomes of the above collaborations are detailed below .

<b>Collaborating Partner</b>	: <b>Oman Medical College, Muscat</b>
<b>Type of Agreement</b>	: MoC
<b>Date of Signing the Agreement</b>	: 07.05.2013
<b>Duration of Agreement</b>	: 20 YEARS

### Objectives of the collaboration agreement:

- Exchange of students for educational programs
- Exchange of faculty for research, teaching and study

### Brief Overview of the Collaborating Partner:

Oman Medical College (OMC), Muscat is the first private Health Sciences College in Oman established in 2001. The College offers a 7 year M.D (Doctor of Medicine) and a 5 year B.Pharm (Bachelor of Pharmacy) programs. Oman Medical College (OMC) Foundation prepares post-secondary level students to succeed in programs offered by Oman Medical College and College of Pharmacy and Health Sciences. Oman Medical College functions at two campuses, Sohar and Bousher. 1273 students are currently enrolled for medicine and pharmacy programs. Until now, 654 medical doctors and 515 pharmacists have graduated from the Oman Medical College. Most graduates are working in the Oman's healthcare sector while the rest are either doing their post graduate studies or have left for their home countries.

### Outcomes:

#### Academic

#### Student exchange

#### Experiential training program

- The final year Bachelor of Pharmacy (B.Pharm) students from Oman Medical College undergo seven week-long training at Department of Clinical Pharmacy, JSS Hospital, Mysuru under student study exchange program. The aim of this experiential training program was to expose the students to an international clinical rotation in different clinical specialty areas in order to train them on basic and advanced concepts of clinical pharmacy practice. This training program was designed to enrich students' understanding, knowledge and skills in the area of pharmaceutical care with a focus on enhancing students' learning experience on in-patient clinical pharmacy services like General Medicine, Surgery, Pediatrics, Nephrology and HIV Specialty Clinic, Oncology Pharmacy; Ambulatory Care, Hospital Pharmacy Functions, and Drug & Poison Information Service.
- The students are briefed on pharmacy education, practice in India and the Clinical Pharmacy services / patient care pharmacy services provided by the Department of Pharmacy Practice at various practice sites. During the entire course of training, on daily basis, the students attend several case presentations and journal club discussions.
- Also, students were posted at Bharath Hospital & Institute of Oncology, Mysuru as a part of their training program to enable them to learn about management of various types of cancers and the scope of clinical pharmacy services in oncology care setting. During this rotation,

students were exposed to preparation, handling and storage of sterile drug mixtures and chemotherapy agents (intravenous admixtures).

- During the students' posting at Asha Kirana Hospital, a HIV specialty hospital, they participated in the ward rounds and got exposed to the various clinical pharmacy services provided at HIV care setting. Students had detailed case discussions and interaction with medical doctors from Asha Kirana Hospital, Mysuru. This enabled them to gain an understanding on the management of HIV and various opportunistic infections, and the role of clinical pharmacist in the HIV care setting.

*OMC Students with Dr. M. Ramesh, Professor & Head, Dept. of Pharmacy Practice and Dr. T. M. PramodKumar, Principal, JSS College of Pharmacy, Mysuru.*



*OMC student's interaction with Leadership at JSS AHER, Mysuru*

- The students stated that seven-week experiential training program provided to them enriched their knowledge and exposure to advanced level patient care management on various diseases treated in a hospital setting. The students appreciated the infrastructure and other facilities provided to them during their stay in Mysuru.
- Till date, **26 students** from OMC have undergone the experiential training program in Pharmacy.



**Details of students who have undergone the Experiential Training Program at  
JSS AHER, Mysuru**

<b>Name of the Student(s)</b>
<ul style="list-style-type: none"><li>• Ms. Ashwaq Rashid Mohammed Al Ghaithi</li><li>• Ms. Hajar Ali Hamed Al Balushi</li><li>• Ms. Jokha Said Sulaiman Al Amri</li><li>• Ms. Maitha Mohammed Said Al Jabri</li><li>• Ms. Salma Jamal A Khider Sandooqa</li><li>• Ms. Hajar Marhoun Al Maktoumi</li><li>• Ms. Anwaar Yousuf Salam Al Riyami</li><li>• Ms. Marya Abdullah Al Mammari</li><li>• Ms. Nadia Mohammed Al Alawi</li><li>• Ms. Ikhlas Mohammed Al Balushi</li><li>• Mr. Ali Haider Mahdi</li><li>• Mr. Ahmed Bahaa Abdelhadi Mansour Hassan</li><li>• Ms. Hind Osman Mohammed Abubaker</li><li>• Ms. Maryam Mohammed Ali Naji Al- Azawi</li><li>• Ms. Alzahraa Alaa Yousif</li><li>• Ms. Ferial Matari</li><li>• Ms. Haya Saad Salman Al-Akhras</li><li>• Mr. Mohamad Almuftada Abu Baker</li><li>• Ms. Noor Wesam Kamel Mohamed</li><li>• Ms. Al-Ghaliya Humaiyd</li><li>• Mohammed Al Aamri</li><li>• Mr. Vimal Ravi</li><li>• Mr. AbdulRahman Abdullah Kintar</li><li>• Ms. Sama Salah Mahdi AL-Khafaji</li><li>• Ms. Al-Karakchi Amenah Ahmed</li><li>• Ms. Mariya</li><li>• Mr. Abdelmaksoud Mohmed Essam Abdelmonem</li><li>• Mr Abdulrahman Mohammed Salah</li><li>• Ms Al Hajar Samar Kamal</li><li>• Ms Alsheekh Hassan Tuqa Yasoob Jawad</li><li>• Ms Al Mamary Aliya Sultan Mohammed</li><li>• Ms Hegazy Ethar Said Mohamed Mousalem</li><li>• Ms Elmi Amaal Aden</li></ul>

**Seminar/ Conferences**

Dr. M. Ramesh Professor & Head, Department of Pharmacy Practice, JSS College of Pharmacy, JSS AHER, Mysuru participated as a Resource Person and presented a talk on : "**Medication without harm - a global patient safety challenge**" at Oman Pharmaceutical Conference 2019 held on 3rd - 4th December 2019.

<b>Collaborating Partner</b>	: <b>Southern Illinois University Edwardsville (SIUE), USA</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 25.3.2014
<b>Duration of Agreement</b>	: 10 Years
<b>Date of Renewal</b>	: 26.11.2017

### Objectives of the collaboration agreement:

- Exchange of faculty for research, teaching and study
- Exchange of students for educational programs

### Brief Overview of the Collaborating Partner:

Southern Illinois University Edwardsville (SIUE) is a public university in Edwardsville, Illinois, United States. SIUE was established in 1957 as an extension of Southern Illinois University Carbondale. It is the younger of the two major institutions of Southern Illinois University system, and, as of 2018, has the larger enrolment. The university offers graduate programs through its Graduate School. SIUE confers degrees from eight colleges and schools, while Lovejoy Library also has status as a school that does not grant degrees:

- College of Arts and Sciences
- School of Business
- School of Dental Medicine
- School of Education, Health and Human Behavior
- School of Engineering
- Lovejoy Library
- School of Nursing
- School of Pharmacy
- Graduate School

### Rankings:

- Ranked in the band of 501-600 by the Times Higher Education US College rankings 2020.

### Outcomes:

#### Academic

#### Student exchange

#### Experiential program

- The experiential program was designed to expose the students to an international rotation focused on public health and infectious diseases that are common in developing countries. The length of the training was for a period of 5 weeks at the practice site in JSS Hospital, Mysuru. The students were introduced to Clinical Pharmacy department activities and briefed about ambulatory patient care. They were posted to Medicine and Paediatrics department for a period of one week each to learn about most common diseases and clinical pharmacy activities. They actively took part in ward round participation, treatment chart review with the

Pharm. D interns. Case discussions were held periodically with the respective academic preceptors.



*MOU signing ceremony of JSS AHER with SIUE, USA*

- They assisted the Pharm. D interns to provide Clinical Pharmacy Services. The students were also exposed to various departments like Pulmonology and DOTS centre, Immunization centre, Cardiology, Emergency, Psychiatry, Dermatology and Gastroenterology departments. The students also presented a case of their choice and discussed the pharmacotherapy in detail with the students and preceptors. As a part of the training the students attended the case presentations and Journal club regularly with the Pharm. D interns.
- The students were posted to Asha Kirana Hospital and Bharath Hospital and Institute of Oncology for a period of one week to learn about infectious diseases and cancerous diseases. The students were also posted in JSS college of Pharmacy, Ooty in the last week to give them an experience on health settings in Government Hospital.



*SIUE student attending to ward rounds and interacting with patients*

- The students expressed that they have had enhanced learning experience in the infectious disease management as they got an opportunity to encounter with different patient populations and unique disease state at the practice site in JSS Hospital, Mysuru. Also, the students appreciated the logistic arrangements and the hospitality provided during their training period.
- The students from JSS AHER underwent a clinical rotation for a period of two months as a part of student study exchange program. The students who have completed their rotation at SIUE had an exposure on the psychiatry care and to explore the modalities of treatment in psychiatry in United States.
- The preceptors discussed in detail on the symptoms, the mental status examination and the management of psychiatric diseases. The students were given assignment to identify drug related problem in the patient's therapy. The students were given an opportunity to visit group homes which are charity homes where homeless psychiatry patients were resided.



Students from JSS AHER attended a seminar on “Heroin in St. Louis – From Awareness to Solution” that was conducted at Hotel Ritz Carlton Clayton Missouri, USA by various social workers, health care providers and state officials for providing an awareness and remedies on increasing use of heroin in the state.

- 15 students have undergone the student exchange program
- 03 faculty meetings have been conducted to enrich the learning experience and discuss the way forward

### **New Residency program in Pharmacy**

- **Residency program in Nephrology Pharmacy** is started at JSS AHER, Mysuru from 2019-20 with the active support of SIUE in establishing the program. JSS AHER is the first institution in the country to offer this residency program.
- The Residency Program provides education and training with a primary emphasis on the development of practice skills in specialized pharmacy practice area. Pharmacists completing this program will be highly qualified independent practitioners able to provide and be responsible for improved drug therapy outcomes for individualized patients as an integral member of the multidisciplinary healthcare team

### **Details of SIUE students who underwent Student Exchange at JSS AHER, Mysuru**

<b>Name of the Student(s)</b>
<ul style="list-style-type: none"> <li>• Mallory Adams</li> <li>• Whitney Miller</li> <li>• Mariyam Mollis</li> <li>• Ms. Allison Paige Davis</li> <li>• Ms. Alyse Battles</li> <li>• Ms. Olivia Brandner</li> <li>• Ms. Catherine Gilmore</li> <li>• Ms. Lauren Skarupa</li> <li>• Mr. Caleb Brasch</li> <li>• Mr. James Remier</li> </ul>

**Details of Pharm. D Students of JSS AHER, Mysuru who underwent student Exchange at SIUE, USA**

<b>Name of the Student(s)</b>
<ul style="list-style-type: none"><li>• Ms. Acsah Annie Paul (JSS CP, Mysuru)</li><li>• Ms. Pavuluru Sindhuja (JSS CP, Ooty)</li><li>• Carolyne Jacob (JSS CP, Ooty)</li><li>• Nickitha Benny (JSS CP, Mysuru)</li><li>• Joann Joji (JSS CP, Mysuru)</li><li>• Veena Vishwanathan (JSS CP, Ooty)</li></ul>

**Research**

**Total No. of Publications:** 01

**Areas of Research Publication:** Training program on infectious disease.

US faculty provide infectious disease training to doctor of pharmacy students and faculty at workshops in India.

Pharmacotherapy Journal with **Cumulative Impact Factor:** 3.473

<b>Collaborating Partner</b>	:	<b>University of North Carolina (UNC), USA</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	20.01.2016
<b>Duration of Agreement</b>	:	10 Years

### Objectives of the collaboration agreement:

- Exchange of faculty & students.
- Joint research activities and other academic activities.

### Brief Overview of the Collaborating Partner:

The University of North Carolina at Chapel Hill was chartered in 1789 and began admitting students in 1795, making it the first public university in the US. It was also the only public university to award degrees in the 18th century and is one of the original eight Public Ivy schools. Today, UNC has 14 schools as well as the College of Arts and Sciences. It offers 78 bachelor's degrees, 112 master's degrees, 68 doctorate programmes and seven professional degree programmes. Its student population of almost 30,000 is taught by a faculty of more than 3,500. Nearly 90 per cent of classes have fewer than 50 students. UNC has one of the highest study-abroad rates of any university in the US, with almost a third of its undergraduates studying in other countries before graduation. It has 325 programmes in 70 countries.

### Rankings:

- Ranked 56<sup>th</sup> by Times Higher Education World university rankings 2021
- Ranked 95<sup>th</sup> by the QS global world rankings 2021.

### Outcomes:

#### Academic

#### Student exchange

#### Experiential training program

- The purpose of the experiential program was to expose the students to an international clinical rotation focused on public health and infectious diseases that are common in developing countries.
- The length of the experiential training for students from UNC at JSS AHER was for a period of four to five weeks. During the training period, the students were introduced to various Clinical Pharmacy Services and ambulatory patient care services provided at the experiential study site JSS Hospital, Mysuru. Following which, the students were posted for a period of 10 days each in Medicine and Pediatric Departments.



### *MOU signing ceremony of JSS AHER with UNC, USA*

- During their clinical posting, they learn the therapeutic management of most of the common diseases seen in India and appreciate the differences that exist in the management of such diseases in United States.
- The students were exposed to various departments like Pulmonology and DOTS centre, Immunization centre, Cardiology, OBG, Emergency, Psychiatry, Dermatology and Gastroenterology.
- Also, the students are posted to Asha Kirana Hospital and Bharath Hospital & Institute of Oncology for couple of days to learn about various opportunistic infections associated with HIV and Cancer management, respectively.
- At the third weekend of their clinical rotation, the students were posted at Govt. Head Quarters Hospital, Ooty which is a practice site of JSS College of Pharmacy, Ooty and this practice site provided them an opportunity to understand the healthcare delivery system at Government settings.
- The students had a great learning experience during their visit to JSS AHER. The students appreciated the facilities and experiential training provided at JSS Hospital, Mysuru. They have appreciated the passion of pharmacy practice faculty towards the profession and their support in having exceptional learning experience during the international clinical rotation.
- Dr Sumitha Nasser Ahmed, faculty, Dept. of Operative Dentistry, University of North Carolina visited JSS Dental College and Hospital, along with Dental Graduate students as a part of global students exchange programme They had sessions of clinical interactions and surgical demonstrations at various departments.
- The students from JSS AHER underwent two month clinical rotation at UNC as a part of student study exchange program. They were exposed to various postings like Infectious Diseases, Trauma care and Rehabilitation, Burn ICU, General Pediatrics, Cardiology/ CT Surgery, Surgical ICU, Bone Marrow Transplant Unit and Organ Transplant Clinic each one week duration.
- The students were attached to the respective preceptors who brief them about the ward activities followed by attending rounds. Students were exposed to teaching sessions, online seminars, case discussions. The students also presented cases and discussed the same in detail with the preceptors.
- 13 International Students have visited JSS AHER and undergone clinical rotation in Pharmacy.

## Recognition

- Due to the successful conduct of the clinical rotations, **JSS AHER faculty members** from Pharmacy domain are recognized as **preceptors for international students**. This is a honor rendered to only a handful of Pharmacy teachers across India.

### Details of UNC, USA students who visited JSS AHER, Mysuru

*UNC Students with Students of Department of Clinical Pharmacy, JSS Hospital, Mysuru*



#### Name of the Students

- Mr Hitesh Rasik Patel
- Ms Jennifer A Voelker
- Ms Bianka Ajith Patel
- Mr William Robert Heilman
- Ms. Leah Osae
- Mr. Aakash Patel
- Ms. Pooja Patel
- Ms. Gublo Bernadette

### Details of Pharm.D students of JSS AHER, Mysuru who visited UNC, USA

#### Name of the Students

- Mr Ritesh Giri
- Ms. Bhagya Sree
- Mr Parth Gupta
- Ms. Grishma Grace John
- Ms. Ronna Ann Raju
- Ms. Renita



*Mr. Parth Gupta with Dr. Ed Sredzienski in the SICU (Surgery Intensive Care Unit) at UNC Hospital.*





*Ms. Bianka Patel and Mr. William Heilman from University of North Carolina, USA during their clinical Rotation at JSS Hospital, Mysuru*



*UNC Students with the leadership and staff of JSS AHER, Mysuru*

### **New Residency program in Pharmacy**

- **Residency program in Oncology Clinical Pharmacy** is started at JSS AHER, Mysuru. UNC actively supported JSS AHER in planning, initiation and implementation of the program. This is one of its kind program in India.

### **Research**

**Total No. of Publications:** 01

**Areas of Research Publication:** Investigation of Anti-Acne, Dermatology

Exploring the Anti-Acne potential of *Impepho (Helichrysum odoratissimum (L.) Sweet)* to combat *Cutibacterium acnes* virulence, *Frontiers in Pharmacology*; 2020;

10.

**Cumulative Impact Factor:** 4.23

<b>Collaborating Partner</b>	:	<b>Charité Universitätsmedizin Berlin</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	07.04.2018
<b>Duration of Agreement</b>	:	10 Years

### Objectives of the collaboration agreement:

- Curriculum development
- Research institutional development
- Professional Development
- Student Exchange
- Faculty Exchange
- Joint course offerings
- Continuing Education

### Brief Overview of the Collaborating Partner:

The Charité – Universitätsmedizin Berlin is one of Europe's largest university hospitals, affiliated with Humboldt University and Free University Berlin. With numerous Collaborative Research Centres (CRC) of the Deutsche Forschungsgemeinschaft, it is one of Germany's most research-intensive medical institutions. From 2012 to 2020, it was ranked by Focus as the best of over 1000 hospitals in Germany. In 2019 and 2020 Newsweek ranked the Charité as fifth best hospital in the world and best in Europe. More than half of all German Nobel Prize winners in Physiology or Medicine, including Emil von Behring, Robert Koch and Paul Ehrlich, have worked at the Charité. Several politicians and diplomats have been treated at the Charité, including German Chancellor Angela Merkel, who underwent meniscus treatment at the Orthopaedic Department, Yulia Tymoshenko from Ukraine, and, more recently, Russian opposition leader Alexei Navalny, who has been receiving treatment at the hospital since his August 2020 poisoning. In, 2010/11 the medical schools of Humboldt University and Freie Universität Berlin were united under the roof of the Charité. The admission rate of the reorganized medical school was 3.9% for the 2019-2020 academic year. QS World University Rankings 2019 ranked the Charité Medical School as number one for medicine in Germany and ninth best in Europe.

### Rankings:

- Ranked 75<sup>th</sup> by Times Higher Education World university rankings 2021
- Ranked 41<sup>st</sup> in the QS global world rankings 2020

### Outcomes

#### Research

International collaborative research has driven sustainable niche projects in health sciences specifically on non-infectious and infectious diseases. The highlights of the collaborative research network work accomplished are summarised as follows -

#### 1. Global Burden of Disease Study

Measurement of changes in health across locations is useful to compare and contrast changing epidemiological patterns against health system performance and identify specific needs for resource allocation in research, policy development, and programme decision making. Using the Global Burden of Diseases, Injuries, and Risk Factors Study 2016, the observation drew from two

widely used summary measures to monitor such changes in population health: disability-adjusted life-years (DALYs) and healthy life expectancy (HALE). The data obtained used these measures to track trends and benchmark progress compared with expected trends based on the Socio-demographic Index (SDI).

## 2. International prevalence and risk factors evaluation for drug-resistant *Streptococcus pneumoniae* pneumonia

*Streptococcus pneumoniae* is the most frequent bacterial pathogen isolated in subjects with Community-acquired pneumonia (CAP) worldwide. Limited data are available regarding the current global burden and risk factors associated with drug-resistant *Streptococcus pneumoniae* (DRSP) in CAP subjects. The study assessed the multinational prevalence and risk factors for DRSP-CAP in a multinational point-prevalence study. This multinational point-prevalence study found a low global prevalence of DRSP-CAP that may impact guideline development and antimicrobial policies.

## 3. Prevalence and Etiology of Community-acquired Pneumonia in Immunocompromised Patients

The correct management of immunocompromised patients with pneumonia is debated. The global network team of researchers evaluated the prevalence, risk factors, and characteristics of immunocompromised patients coming from the community with pneumonia. The study showed that findings could be considered by clinicians in prescribing empiric antibiotic therapy for Community-acquired Pneumonia (CAP) in immunocompromised patients. Patients with AIDS and hematological cancer admitted with CAP may have higher prevalences of fungi, mycobacteria, and noninfluenza viruses.

### Research Publications

The collaborative research outputs in the form of scientific publications are enumerated below;

**Total No. of Publications:** 05

**Areas of Research Publication:** Epidemiology, Pathology, Infectious Diseases

**Cumulative Impact Factor:** 194.32

**No. of Citations:** 2551

SI. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016	The Lancet; 2017; 390 (10100): 1260-1344	60.39	712

2	Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016	The Lancet; 2017; 390 (10100): 1211-1259.	60.39	1709
3	Measuring progress and projecting attainment on the basis of past trends of the health-related Sustainable Development Goals in 188 countries: an analysis from the Global Burden of Disease Study 2016	The Lancet; 2017; 1423-1459	60.39	116
4	International prevalence and risk factors evaluation for drug-resistant Streptococcus pneumoniae	Journal of Infection; 2019; 79(4): 300-311	4.84	2
5	Prevalence and Etiology of Community-acquired Pneumonia in Immunocompromised Patients	Clinical Infectious Diseases; 2019; 68(9): 1482-1493	8.31	12

<b>Collaborating Partner</b>	: <b>Maastricht University, Netherlands</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 17.07.2012
<b>Duration of Agreement</b>	: 10 years
<b>Date of Renewal</b>	: 23.07.2017

### Objectives of the collaboration agreement:

- Exchange of faculty/ students
- Joint research projects - Cognitive science, biomaterials, CV diseases, biomarkers, Public Health department NIRAS.

### Brief Overview of the Collaborating Partner:

Maastricht University is a public university in Maastricht, Netherlands. Founded in 1976, it is the second youngest of the thirteen Dutch universities. In 2019, 19,000 students studied at Maastricht University, 54% of whom were foreign students, with over 4,000 employees. Maastricht University regularly ranks as one of Europe's leading universities. The University has been placed in the top 300 universities in the world by five major ranking tables. It has seven faculties – Engineering, Arts and Social Science, Law, Business, Health, Medicine and Life Sciences.

### Rankings:

- Ranked 121<sup>st</sup> by Times Higher Education World university rankings 2021.
- Rank of 234<sup>th</sup> in the QS global world rankings 2020.

## Outcomes

### Academic

#### Faculty Exchange

04 Faculty exchange have materialized and discussions have been held on way forward for research collaboration.

#### Symposium Organized

- A Joint Symposium on Public Health was organized on 30<sup>th</sup> October 2017. The international delegation from 05 countries deliberated on the public health issues. Discussions were also held on having research projects with Multicountry and multi-institutional involvement.
- Prof. Dr. Jos Smits, Professor of Pharmacology, Director Centre for Research Innovation, Support and Policy (CRISP) at Maastricht University Medical Centre , Associate Dean for Research of FHML at Maastricht University, gave a brief overview of Maastricht University and expressed thier eagerness for international collaborations.
- Prof. Dr Maurice P Zeegers, Scientific Director of the Care and Public Health Research Institute (CAPHRI) Maastricht University Medical Centre, made a detailed presentation about infrastructure, learning resources, research facilities, living labs, Departments, publications, societal impact created through research and outreach programmes by Maastricht University and CAPHRI.



## Research

### Research Publications

The collaborative publications are detailed below;

**Total No. of Publications: 03**

**Areas of Research Publication: Dermatology, Nanotechnology**

Formulation and characterization of chitosan encapsulated phytoconstituents of curcumin and rutin nanoparticles- International Journal of Biological Macromolecules

**Cumulative Impact Factor: 10.78**

**No. of Citations: 34**

<b>Collaborating Partner</b>	: <b>Roseman University of Health Sciences, USA</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 15.03.2010
<b>Duration of Agreement</b>	: 15 years
<b>Date of Renewal</b>	: 10.03.2017

### Objectives of the collaboration agreement:

- Exchange of faculty, students, administrative staff
- Collaborative research projects
- Organizing symposia, lectures, CMEs
- Academic cooperation

## Brief Overview of the Collaborating Partner:

Roseman University of Health Sciences (RUHS) is a private university focused on healthcare and located in Henderson, Nevada. It has a second campus in South Jordan, Utah. It was founded by Dr. Harry Rosenberg, enrolled its first class in January 2001, and was originally called the Nevada College of Pharmacy and the University of Southern Nevada. Founded in Henderson, Nevada in 1999, Roseman University of Health Sciences is a non-profit, private institution of higher learning training the next generation of undergraduate and graduate-level health care professionals that serve, collaborate and set new standards in their communities and within their professions. This year the University celebrates 20 years of impacting the health of the lives and communities around us.

The university offers Doctor of Dental Medicine, Doctor of Pharmacy, Bachelor of Science in Nursing and Master of Business Administration degrees. Roseman's programs are unique in that it utilizes a block system in which students focus on one topic at a time (rather than enrolling in multiple courses concurrently).

## Outcomes:

### Academic

#### Adjunct faculty

- Two faculty members from RUHS are now adjunct faculty of JSS AHER. Both the adjunct faculty have visited JSS AHER for one week period and have held interactions and training sessions with the students and staff.
- Guest lectures has been delivered by the experts from RUHS. The students expressed that they had a great opportunity to learn and interact with the experts.
- Dr. Manas Mandal visited JSS College of Pharmacy, Mysuru from January 20-22, 2019. He delivered a guest lecture on “**Concepts immunology with emphasis on T-cell activation and vaccination**” on 21<sup>st</sup> January 2019 at JSS College of Pharmacy, Mysuru.



Dr. Mandal discussing with students disorders



Manas on immune

*Dr. Surajit Day, Associate Professor, Roseman University of Health Sciences, USA giving detailed lecture on Injectable Liposomes*

Dr. Surajit Dey visited JSS College of Pharmacy, Mysuru from December 03-05, 2019. He delivered a guest lecture on “**Identification of P-Glycoprotein in Human and Rabbit Cornea and Its role in Restricting Ocular Drug Absorption**” and held interactions with Staff and students.

## Research

**Total No. of Publications:** 04

**Areas of Research Publication:** Clinical Pharmacy training, Nanotechnology, Anti-cancer activity.

**Cumulative Impact Factor:** 16.71

Sl. No.	Title of the Paper	Journal details	Impact Factor
1	Nobiletin as a molecule for formulation development: An Overview of advanced formulation and nanotechnology-Based strategies of nobiletin	AAPS PharmSciTech; 2020; 2(6).	2.61
2	An overview of advanced formulation and nanotechnology-based approaches for solubility and bioavailability enhancement of silymarin	Journal of drug delivery science and technology; 2020; 60: 1-12.	2.73



<b>Collaborating Partner</b>	:	<b>Institute for Global Public Health Frank H. Netter Md School of Medicine, Quinnipiac University, USA</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	26/05/2017
<b>Duration of Agreement</b>	:	10 years

### Objectives of the collaboration agreement:

- Exchange and training of scientific and technical personnel for service, teaching, and research in the related areas.
- Joint or co-operated scientific research in selected areas of mutual interest
- Holding of joint conferences, seminars, and symposia workshops and invited lectures on national and international level
- Student mobility program with regards to visit, service, research, training and/or participation in the education programs of each University.
- Joint supervision of research students in selected areas of mutual interest,
- Joint or co-operated application of research grant in selected areas of mutual interest

### Brief Overview of the Collaborating Partner:

Quinnipiac University is a private university in Hamden, Connecticut. The university grants undergraduate, graduate, and professional degrees through its College of Arts and Sciences, School of Business, School of Engineering, School of Communication, School of Health Sciences, School of Law, School of Medicine, School of Nursing, and School of Education. The university also hosts the Quinnipiac University Polling Institute. Currently, Quinnipiac offers 58 undergraduate majors, 20 graduate programs, and a Juris Doctor program.

### Rankings

Ranked 261 by Times Higher Education World university rankings 2021

### Outcomes

#### Academic

#### Faculty Exchange

Dr. David R Hill, Professor of Medical Sciences, Director of Global Public Health has visited JSS AHER on more than one occasion and has held discussions on the way forward for collaboration.

#### Student Exchange

04 Students from Quinnipiac University have undertaken a clinical Rotation in Community Medicine department for a period varying from 4-6 Weeks. Faculty members from the Department of Community Medicine had the opportunity to co-guide these students.

#### *Ms Najama Homidi*

Ms Najama Homidi (Student of Quinnipiac University, Hamden, Connecticut) during her observership at Department of Community Medicine, under the mentorship of Dr Praveen

Kulkarni, Associate Professor, Department of Community Medicine conducted qualitative study in “Factors influencing gender discrimination among adolescent school children in rural and urban communities”. As a part of her study She conducted four focus group discussions, in depth interviews and reflective writing among adolescents and teachers of JSS Schools

### ***Ms Sara Richards***

Ms Sara Richards (Student of Quinnipiac University, Hamden, Connecticut) during her observership at Department of Community Medicine, under the mentorship of Dr Praveen Kulkarni, Associate Professor, Department of Community Medicine conducted a comparative study of “Factors influencing utilization of maternal and child health services in rural and urban communities in Mysuru”. She surveyed 80 women (40 each in rural and urban communities) and explored the factors which favor and hinder maternal and child care services.

### ***Ms Rofina Johnkennedy***

Ms Rofina Johnkennedy (Student of Quinnipiac University, Hamden, Connecticut) during her observership at Department of Microbiology, JSS Medical College, completed a research project on “Surgical site infection “under the mentorship of Dr Sumana M N, Professor, Department of Microbiology.

### ***Ms Chandler Ford***

Ms Chandler Ford (Student of Quinnipiac University, Hamden, Connecticut) underwent clinical observership obtaining exposure to both inpatient and outpatient clinical services under the mentorship of Dr.Sujatha, Professor, Department of Obstetrics and Gynaecology at Department of Obstetrics and Gynaecology



## **Research**

A project entitled - ***Collecting family planning intentions and providing reproductive health information using a tablet-based video game in India sponsored by Bill and Melinda Gates Foundation, USA*** – has been completed.

## **Research Publications**

**Total No. of Publications:** 01

**Areas of Research Publication:** Reproductive health- Collecting family planning intentions and providing reproductive health information using a tablet-based video game in India- Gates Open Research

<b>Collaborating Partner</b>	: <a href="#">The University of Warwick, United Kingdom</a>
<b>Type of Agreement</b>	: RCA
<b>Date of Signing the Agreement</b>	: 29.06.2020
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To carry out research on treatment of rice plant with arsenic and collection of root samples at a different time interval
- To submit the research findings in the form of report

### Brief Overview of the Collaborating Partner:

The University of Warwick is one of the United Kingdom's leading universities, with an acknowledged reputation for excellence in research and teaching, for innovation, and for links with business and industry. It is a public research university on the outskirts of Coventry between the West Midlands and Warwickshire, England. It was founded in 1965 as part of a government initiative to expand higher education within the University, Warwick Business School was established in 1967, Warwick Law School was established in 1968, Warwick Manufacturing Group (now WMG) was established in 1980 and Warwick Medical School was opened in 2000. Warwick incorporated Coventry College of Education in 1979 and Horticulture Research International in 2004.

The University of Warwick has an average intake of 4,950 undergraduates. In 2017, Warwick was named as the university with the joint second highest graduate employment rate of any UK university.

### Rankings:

Ranked 62<sup>nd</sup> in the 2020 QS World University rankings

Ranked 77<sup>th</sup> in the 2020 Times Higher Education World University rankings.

### Outcomes:

#### Research

#### Funded Research Project

- The University of Warwick has provided funding of Rs. 18.0 Lakhs for the Research Project entitled "***Proteomic analysis of rice roots exposed to arsenate to identify the novel regulators of arsenic stress response***". The research project is ongoing.
- The sanctioned grant from this collaboration has enabled JSS AHER, Mysuru to **establish a plant molecular biology laboratory** at Department of Biotechnology and Bioinformatics, Faculty of Life Sciences. This laboratory will have a sophisticated plant growth chamber, refrigerated microcentrifuge and other minor essential instruments.

#### Research Publications

JSS AHER, Mysuru has collaborated with University of Warwick prior to this RCA in the area of global burden of disease. The outcomes of collaboration in the form of publications are enumerated below;

**Total No. of Publications:** 07

**Areas of Research Publication:** Global Burden of Disease, Oncology

**Cumulative Impact Factor:** 309.14

**No. of Citations:** 3319

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived with Disability, and Disability-Adjusted Life-Years for 29 Cancer Groups, 1990 to 2017: A Systematic Analysis for the Global Burden of Disease Study	JAMA Oncology; 2019.	24.8	109
2	Mapping 123 million neonatal, infant and child deaths between 2000 and 2017	Nature; 2019; 574(7778): 353-358	42.78	15

<b>Collaborating Partner</b>	: <b>Texas Southern University, USA</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 11.02.2019
<b>Duration of Agreement</b>	: 10 years

### Objectives of the collaboration agreement:

- Student Exchange
- Faculty Exchange
- Professional Development
- Joint Research projects
- Continuing Education
- Curriculum development and delivery

### Brief Overview of the Collaborating Partner:

Texas Southern University (TSU) is a public historically black university (HBCU) in Houston, Texas. The university is one of the largest and most comprehensive HBCUs in the nation with over 10,000 students enrolled and over 100 academic programs. The university is a member school of the Thurgood Marshall College Fund and it is accredited by the Southern Association of Colleges and Schools. It is classified among "R2: Doctoral Universities – High research activity". Texas Southern University offers over 100 bachelors, masters, and doctoral degrees. The university is classified by the Carnegie Foundation as a "doctoral university with higher research activity" and currently comprises 11 schools and colleges along with several scholastic and research programs.

### Outcomes:

#### Academic

#### Adjunct faculty

- One of the faculty members from TSU is an adjunct faculty of JSS AHER.

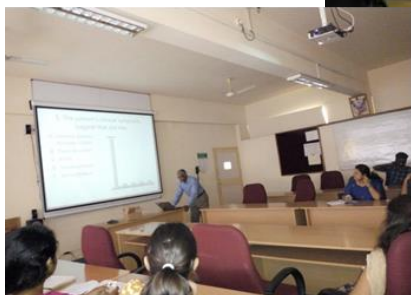
#### Faculty training programme

- Dr. Amruthesh Shivachar, Professor, TSU, USA visited JSS AHER on 11th February 2019; during the visit he had discussed on the student/faculty exchange and Professional Development.
- Dr. Amruthesh Shivachar conducted Faculty training programme on “case based learning and team based learning” where he practically involved faculty to develop cases in their areas of expertise. He also engaged 11 Case based lectures in different subjects like biochemistry, Pharmacology for B.Pharm and Pharm D programmes, where he interacted with concerned Subject teachers and students. Delivered extensive guest lectures on 5 different research topics like Immunohistochemistry, Western blotting, Cannabinoids, of his expertise to PGs and Ph.Ds.
- He has also trained the staff and students from Department of Pharmacology at JSS College of Pharmacy, Mysuru in advanced animal screening techniques.

#### NIH proposal development

- Professor Amruthesh guided for NIH proposal development for submission and finalized the concept proposal with 2 specific aims to submit to the NIH. He also engaged in activities like, demonstration of immunocytochemistry techniques to Ph.D. students.

#### *Faculty training programme*



*Student interaction during Case study learning*

## **Research**

### **Faculty research training**

- As a part of MoU between JSS Academy of Higher Education & Research, Mysuru and Texas Southern University (TSU), the faculty exchange program was initiated.
- A faculty member from JSS AHER has undergone three month research training in Texas Southern University. During the training period, our faculty was introduced to various Department to explore all the possible area of research at TSU.
- During the training period, the initial couple of weeks were explored in working at tissue engineering and cell culture lab with the help of Dr. Shivachar.



*Mr. Mahendran, Lecturer, JSS College of Pharmacy, Mysuru with Dr. Amruthesh Shivachar at the Tissue engineering Lab  
At M D Anderson Cancer Center, Houston*

- Meanwhile, our faculty got an opportunity to visit M D Anderson Cancer Center. Dr. RSK Vijayan at M D Anderson explained the facilities for cancer research at their institution.
- A faculty underwent on exchange program had a great learning experience during training period at TSU and appreciated JSS AHER for extending the facilities. As an outcome, a research paper has been published along with the collaborators.

- A faculty from TSU is co-guiding a research scholar of JSS AHER.

### Research Publications

**Total No. of Publications:** 02

**Areas of Research Publication:** Nanotechnology, Anti-cancer activity.

**Cumulative Impact Factor:** 9.45

Sl. No.	Title of the Paper	Journal details	Impact Factor
1	Curcuminoid analogs, a novel class of drugs for the treatment of Glioblastoma multiforme	The FASEB Journal; 2020; 34(S1): 1.	4.97
2	Current perspectives on therapies, including drug delivery systems, for managing Glioblastoma Multiforme	ACS Chemical Neuroscience; 2020; 11(19): 2962-2977	4.48

<b>Collaborating Partner</b>	: <b>Pacific University, Oregon, USA</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 02.03.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To foster communication and exchange of information, resources, and experiences between clinical pharmacists
- Student & Faculty Exchange

### Brief Overview of the Collaborating Partner:

Pacific University is a private university located in Forest Grove, Oregon, USA. Founded in 1849 as the Tualatin Academy, the university's original Forest Grove campus is 23 miles (37 km) west of Portland. The university maintains three other campuses in the cities of Eugene, Hillsboro, and Woodburn. Over 4,000 students are enrolled in College of Arts & Sciences, Education, Business, Health Professions and Optometry.

### Rankings:

- Ranked 382<sup>nd</sup> in the Times Higher Education US College rankings 2021.

### Outcomes

#### Academic

As a part of Pharmabridge program, the International Pharmaceutical Federation (FIP), Netherlands, Dr. B.S. Roopa, Lecturer, JSS College of Pharmacy, Ooty had visited the School of Pharmacy, Pacific University, Oregon USA from 19th April – 13th May 2018. During her visit, she was worked with Dr. Marina Suzuki, Assistant Professor & Director for the Office of Global Pharmacy Education and Research to propose the MoU between Pacific University College of Pharmacy, USA and JSS Academy of Higher Education and Research, Mysuru. The MOU and Agreement was finalized and signed on dated 2 March 2019.



Dr. BS Roopa with Dr. Marina Suzuki  
Dr. Roopa BS with Dr. Marina Suzuki's team at Oregon, USA

- Dr. B. S. Roopa, is currently collaborating with Dr. Marina Suzuki, Assistant Professor & Director for the Office of Global Pharmacy Education and Research for the outcomes of MoU signed between the Institutions.



- **Student/Faculty exchange:**

Due to COVID-19 pandemic situation the Global Engagement office of Pacific University (College of Pharmacy) USA had intimated the inability of their staff and students from the visit. This activity is on board for upcoming year 2021.

As on date, the student & faculty team from the Pacific University School of Pharmacy, Oregon will visit JSS Academy of Higher education and Research, Mysuru and campuses of both the Pharmacy Colleges at Ooty and Mysuru during the tentative schedule proposed would be October 2021- April 2022.

<b>Collaborating Partner</b>	: <b>UCSI University, Malaysia</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 22.08.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Co-operation on new or existing academic programmes;
- The development of joint research activities;
- The development of joint conferences and other academic meetings;
- Staff exchange or mutual visits to both institutions;
- Postgraduate student training and development;
- Student exchange;
- The exchange of information in the form of publications and journals, reference materials and other results of teaching and research; and
- Any other activities viewed to be potentially beneficial.

### Brief Overview of the Collaborating Partner:

UCSI University is a comprehensive university in Kuala Lumpur, Malaysia. The University has been consistently moving up its rankings and has distinguished itself as a higher learning institution with years of track record in providing educational excellence since its establishment.

UCSI offers various disciplines, which include, but are not limited to medicine, pharmacy, engineering, IT, applied sciences, business, architecture, music, social sciences, creative arts and hospitality, at undergraduate and postgraduate levels. Institute of Music (IMus) emerged as one of top 100 schools for performing arts in the QS World University Rankings by Subject year 2018, 2019 and 2020.

Partnering with more than 4,200 companies, UCSI runs one of Malaysia's widest university-industry networks, providing students and staff with internships, job opportunities, knowledge transfers and joint research arrangements. It is Malaysia's fourth-best university in the 2019 QS Graduate Employability Rankings.

UCSI University has seven faculties and three institutes that offer more than 100 academic programmes - Faculty of Applied Sciences, Faculty of Business and Management, Faculty of Engineering, Technology and Built Environment, Faculty of Hospitality and Tourism Management, Faculty of Medicine and Health Sciences, Faculty of Pharmaceutical Sciences, Faculty of Social Science and Liberal Arts, Institute of Music, Institute of Computer Science and Digital Innovation and De Institute of Creative Arts and Design.

### Rankings:

- In the QS World University Rankings 2021, UCSI is ranked 391, placing wit among the world's top 400 varsities.
- Its music school – Institute of Music (IMus) – is a top 100 in the world and Malaysia's foremost school in the area of performing arts twice in a row (QS World University Rankings by Subject 2019)

- UCSI is also Asia’s fastest rising university (QS University Rankings: Asia 2018) and is rated in Tier 5 (Emerging Universities) in SETARA 2017, placing it on a par with established foreign branch campuses in Malaysia.

**Outcomes:**

**Academic**

**Adjunct faculty**

- Dr. M. P. Venkatesh is an adjunct faculty for UCSI education and is effective from 1<sup>st</sup> Sept 2020 - 31<sup>st</sup> Aug 2022.
- One of the faculty members from UCSI University is co-guide for a research scholar.

**Guest lecture**

- Dr. Habibur Rahman of UCSI University delivered guest lecture on “**Introduction to lipid based drug delivery system**” on 24/01/2020.
- He also briefed the participants on 3D printing, medical devices for organ transplant, differences and ethical issues involved in cloning. Information related to Artificial Intelligence (AI), Artificial Neural Network (ANN).



*Dr. Habibur Rahman from UCSI University interacting with students*

- As a part of MoU between JSS AHER and UCSI University, Malaysia, staff and student exchange programmes are envisaged.
- Joint publications and Professional Development are expected.

**Collaborating Partner** : **PII Tech, USA**  
**Type of Agreement** : MoU  
**Date of Signing the Agreement** : 8.1.2016  
**Duration of Agreement** : 10 Years

**Objectives of the collaboration agreement:**

- To conduct clinical Validation of the Medical devices developed by its India center at JSS Medical College and Hospital, Mysuru.

**Brief Overview of the Collaborating Partner:**

It is an IT based company in USA founded in 2007 by experts in the IT services marketplace. The main office is located in Minneapolis, Minnesota, USA.

**Outcomes**

02 consultancy projects worth INR 5.10 Lakhs have been completed.

<b>Collaborating Partner</b>	: <b>JSS Academy of Higher Education and Research (Mauritius) Ltd.</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 05.09.2018
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- JSS Academy of Higher Education & Research, Mysuru and JSS Academy of Higher Education and Research (Mauritius) will work together towards strengthening of educational, research and cultural exchange between the institutions. They will cooperate to offer post-secondary educational programmes in Mauritius to maximize the strengths of all parties and both countries in educating, developing and nurturing graduates.
- They will work together towards collaborating in the provision of any other academic cooperation and other services as may be required from time to time and identified by both parties and in which either party has expertise.

### Brief Overview of the Collaborating Partner:

The JSS Academy of Higher Education and Research, Mauritius, a post-secondary educational institution with degree awarding powers at the start of activities, was established in August 2018 under the mentorship of JSS Academy of Higher Education & Research (JSS AHER), Mysuru.

The JSS Academy of Higher Education and Research, Mauritius is located on eight acres of land with 14,689 sq.mts of built up area with necessary infrastructure, costing more than half a billion Mauritian Rupees, to improve the quality of post-secondary education in Mauritius.

JSS AHER, Mysuru has constantly mentored and supported JSS AHER, Mauritius since its inception.

### Outcomes

The outcomes of the collaboration are;

- JSS AHER, Mauritius has been approved by Higher Education Commission, Mauritius as an institution with degree awarding powers. It has commenced its operations from 17<sup>th</sup> August 2020. The following programs have been approved;

Sl. No.	Program
1	Bachelor of Pharmacy (B.Pharm)
2	B.Sc (Hons) in Biotechnology
3	B.Sc (Hons) in Environmental Sciences
4	B.Sc (Hons) in Cosmetic Science
5	BBA in Hospital and Health System Management
6	MBA in Hospital Administration

- Accreditation Council for Pharmacy Education (ACPE), USA has granted Pre-certification for the B.Pharm Program, becoming the **first institution in the African Region to obtain the same.**

<b>Collaborating Partner</b>	: <b>Cincinnati-Mysore sister city Organization, USA</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 31.1.2013
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- Joint research and training programmes, promoting telemedicine.
- Faculty & student exchange at all levels. Promote telemedicine interactions.
- The preparation of joint proposal for external funding.
- Collaborate and design clinical trials.
- Joint sponsorship of conferences & joint publication.
- Develop novel graduate curriculum in drug development and regulatory affairs.

### Brief Overview of the Collaborating Partner:

The City of Cincinnati partnered with its first Sister City, Liuzhou, China, in 1988, and the other six quickly followed. By 1994, Cincinnati had eight international sister cities, Liuzhou, China (1988); Gifu, Japan (1988); Kharkiv, Ukraine (1989); Munich, Germany (1989); Harare, Zimbabwe (1990); Nancy, France (1991); New Taipei City, Taiwan (1994). and Mysore, India (2012).

All of the cities are important centers of culture, industry, and education and noted for their scenic landscapes or historic architecture. The Office of the Mayor, the City of Cincinnati, and the Cincinnati USA Sister City Association support Cincinnati's interaction with these cities. Each Sister City has its own committee or association, which is directly responsible for the partnership by organizing its membership, budget, programs, activities, and visits. The Sister City committees and associations organize exchanges that include education culture, science, commerce, and government.

The International Sister City program, created by President Eisenhower with a mission to promote mutual understanding, has expanded to include a full range of exchanges, and benefits between two cities and inherently two countries. An agreement signed by the Mayors of participating cities formalizes the relationship and although government is a sponsor, it is the citizens that volunteer and create value for each other.

The Cincinnati USA Sister City Association acts as a liaison between the Office of the Mayor, City Hall and Cincinnati's Sister City organizations, and is a resource for creating implementing programs in education, tourism, community service and economic development for the city. The organization is currently completely organized and run by volunteer citizens. Currently, the Cincinnati USA Sister city Association reports to Council woman Amy Murray, Chair of the Sister Cities at the Mayor's office.



MoU Signing ceremony



Felicitations.

## Outcomes

The collaboration has materialized in 04 faculty exchanges and sharing of expertise on telemedicine.

## Research

### Research Publications

**Total No. of Publications:** 03

**Areas of Research Publication:** Ecology

**Cumulative Impact Factor:** 20.46

**No. of Citations:** 28

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
2	Impact of weather and climate change with indoor and outdoor air quality in asthma: A Work Group Report of the AAAAI Environmental Exposure and Respiratory Health Committee	Journal of Allergy and Clinical Immunology; 2019; 143(5): 1702-1710	10.23	11
3	Impact of weather and climate change with indoor and outdoor air quality in asthmatic patients	Journal of Allergy and Clinical Immunology; 2019.	10.23	11

<b>Collaborating Partner</b>	:	<b>United States Pharmacopoeia (USP)</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	13.06.2020
<b>Duration of Agreement</b>	:	5 years

### **Objectives of the collaboration agreement:**

- To offer joint programs in Quality Assurance and Quality Control.
- To utilize the already available training module/ material of United States Pharmacopoeia (USP) and develop programs.
- To upgrade the Training product of United States Pharmacopoeia (USP).

### **Brief Overview of the Collaborating Partner:**

The United States Pharmacopoeia is the official pharmacopoeia of the United States, published dually with the National Formulary as the USP-NF. The United States Pharmacopoeia Convention (usually also called the USP) is the nonprofit organization that owns the trademark and copyright to the USP-NF and publishes it every year. Prescription and over-the-counter medicines and other health care products sold in the United States are required to follow the standards in the USP-NF. United States Pharmacopoeia also sets standards for food ingredients and dietary supplements.

USP Education supports the development of future health, chemical and food science professionals by providing access to USP resources and enhancing learning inside and outside of the classroom.

### **Outcomes**

The MoU envisages the offering of online programs in Quality Assurance and Quality Control. The programs are in development phase and the offering of the planned programs would commence from March 2021.

<b>Collaborating Partner</b>	: <b>Genomic Medicine Foundation, UK</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 12.06.2020
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To set-up joint education and training programs in Medical Genomics with resource persons from JSSAHER Mysuru, India and GMF-UK.
- Conducting joint conferences, workshops and other academic meetings to update knowledge on Medical Genomics.
- To have student and faculty exchange programs to enhance mutually beneficial skills and competencies in medical genomics.
- To formulate multi-centric collaborative research and development projects in Medical Genomics and other related OMIC areas.
- To publish outcomes of joint research collaborations in peer reviewed open access biomedical journals and online resources.
- To develop protocols and establish links for providing quality molecular diagnostic laboratory services at JSS Hospital and Medical College.
- To facilitate training and continuous medical education system for the clinical faculty at JSS Hospital with reference to specific group of genetic disorders for efficient and effective clinical outcomes.

### Brief Overview of the Collaborating Partner

The Genomic Medicine Foundation (GMF) is a non-profit organization providing up to date and evidence-based information on genetics/genomics relevant to clinical medicine and healthcare. The Foundation undertakes a number of professional activities including books, dedicated journal, genetic & genomic clinics, expert medico-legal reports, organizing educational seminars and symposia on genetics & genomics, advise and consultancy on developing genomic research projects and providing information to the public, press and media. The Genomic Medicine Foundation is located in London, United Kingdom.

### Outcomes

#### Academic

- **Joint academic programs:** Revision of the syllabus of existing BSc and MSc Medical Genetics and Genomics is being carried out under the guidance of Dr. Dhavendra Kumar, Medical Director/CEO GMF-UK which will be implemented from July 2021.
- **Capacity Building:** Periodic advices are being sought from the experts in strengthening the genomic facility at our institute.

#### Outlook/ Future Ahead

- We plan to initiate new investigations in the Medical Genetic Laboratory in consultation with Genomic Medicine Foundation UK that will be useful for the patients at JSS.
- We also plan to organize lecture series for the students enrolled in the Medical Genetics program at JSS by the experts from Genomic Medicine Foundation UK.



<b>Collaborating Partner</b>	: <b>University of Maryland, Baltimore, USA</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 22.08.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To facilitate exchange of information, resources, and experiences of clinical pharmacists between the Student/Faculty of the partnering Universities
- To develop Collaborative academic programme between the partnering Institutions
- Proposition for joint research project leading to publications

### Brief Overview of the Collaborating Partner:

Opened in 1807, the University of Maryland, Baltimore (UMB) is Maryland's public health, law, and human services university, dedicated to excellence in education, research, clinical care, and public service. UMB enrolls over 6,700 students in six nationally ranked professional schools — dentistry, law, medicine, nursing, pharmacy, and social work — and an interdisciplinary Graduate School. The University offers 62 doctoral, master's, baccalaureate, and certificate programs and confers most of the professional practice doctoral degrees awarded in Maryland.

UMB is a thriving academic health center combining cutting-edge biomedical research and exceptional patient care. UMB's extramural funding totaled a record-breaking \$667.4 million in FY 2018, and each tenured/tenure-track faculty member brings \$1.3 million in research grants, on average, into UMB every year.

The University of Maryland BioPark, Baltimore's biggest biotechnology cluster, fuels the commercialization of new drugs, treatments, and devices, giving 1,000 scientists and entrepreneurs the space to create and collaborate.

It has the following schools and colleges;

- School of Medicine
- Carey School of Law
- School of Dentistry
- School of Pharmacy
- School of Nursing
- School of Social Work

### Rankings:

As per the Times Higher Education Rankings world universities ranking 2021

- 601–800<sup>th</sup> World University Rankings 2021
- 101–200<sup>th</sup> Impact Rankings 2020
- 270<sup>th</sup> US College Rankings 2021

### Outcomes:

#### Academic

Faculty & student exchange, training programmes for Pharm.D students for their internship activities between the institutions are to be planned in the future. Collaborative research, publications, development of collaborative academic programmes is to be explored. Discussions are initiated to offer joint Pharm.D program.

#### Research

Proposals for joint research projects are yet to be initiated. Due to the COVID-19 pandemic, the activities for the same are yet to be initiated and will be proposed for the upcoming year 2021.

<b>Collaborating Partner</b>	: <b>The University of Chester, United Kingdom</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 06.11.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- Staff and student exchange programmes.
- Visiting scholar activities.
- The development of collaborative academic provision.
- Any other mutually agreed activity of benefit to both Parties.

### Brief Overview of the Collaborating Partner:

The University of Chester is a public university located in Chester, England. Established in 1839, the University of Chester is one of the oldest higher education institutions in United Kingdom. The university was the first purpose-built teacher training college in the UK and is based across five campus sites in and around Chester, one in Warrington, and a University Centre in Shrewsbury. It offers a range of foundation, undergraduate and postgraduate courses, as well as undertaking academic research. The institution gained full university status in 2005 and now offers much more than educational training, with over 400 course combinations in a wide variety of subjects available. The University of Chester now has 1,880 staff and some 19,850 students, drawn from the United Kingdom, Europe and further afield, particularly the United States, India, China, Nigeria, Turkey, Uganda, Pakistan, Ghana, Bangladesh, Qatar, Indonesia, Vietnam, Japan, Sri Lanka and Malaysia. The university is organised into seven faculties of study. Several of these are subdivided into academic departments. The faculties and departments are:

- Faculty of Arts and Humanities
- Chester Business School
- Faculty of Medicine, Dentistry and Life Sciences
- Faculty of Science and Engineering
- Faculty of Social Sciences
- Faculty of Education and Children's Services
- Faculty of Health and Social Care

Being a Teaching Intensive, Research Informed Higher Education institution, the university received Silver in Teaching Excellence Framework (TEF).

### Outcomes

- The activities of collaborative research, faculty and student exchange are planned in the area of Psychiatry. Activities for the same are yet to be initiated.
- The Department of Psychiatry is going to have an activity with University of Chester in the area of Psychiatric Nursing (we have Msc Psychiatric nursing at JSS College of Nursing)
- We plan to develop modules to train Psychiatry nurses to predict and prevent aggression and violence in Psychiatry wards
- Using training for verbal de-escalation harm reduction etc
- This will be spearheaded by Dr Steven Jones, University of Chester, who is from a nursing background.
- There was supposed to be a visit by team from Chester in early 2020 but has got delayed due the pandemic.

<b>Collaborating Partner</b>	:	<b>Albany College of Pharmacy and Health Sciences, USA</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	16.5.2018
<b>Duration of Agreement</b>	:	5 years

### **Objectives of the collaboration agreement:**

- Joint Research Activities
- Faculty / Expert visits and talks
- Technical Guidance
- Organizing Joint seminars and workshops

### **Brief Overview of the Collaborating Partner:**

Albany College of Pharmacy and Health Sciences (formerly Albany College of Pharmacy) is a private, independent college with campuses in Albany, New York and Colchester, Vermont. ACPHS is home to approximately 1,400 students and 115 full-and-part time faculty. The College's academic programs includes five Bachelor's programs, five Master's programs, and the Doctor of Pharmacy (Pharm.D.).

### **Rankings:**

- Ranked 323<sup>rd</sup> in the Times Higher Education US College Rankings 2021.

### **Outcomes:**

- 02 faculty Exchange have occurred.
- Discussions are underway to offer joint programs in Pharmacy and initiate student exchange.

<b>Collaborating Partner</b>	: <b>Sunway University, Malaysia</b>
<b>Type of Agreement</b>	: CRA
<b>Date of Signing the Agreement</b>	: 05.09.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- The Parties shall jointly perform the research on System Biology.
- The Research seeks to address the following issues.
  - To use the systems biology approach in order to study the complex interactions within biological systems. This will enable us to discover new biomarkers for disease, stratify patients based on unique genetic profiles, and target drugs and other treatments.
  - Sunway University shall provide input and carry out research on affective computing.
  - JSS AHER shall provide input and carry out research on sentiment analysis, and textual emotion detection.

### Brief Overview of the Collaborating Partner:

Sunway University is a private university based in Bandar Sunway, Subang Jaya, Selangor, Malaysia. It was opened in 1987 as Sunway College, part of which was then separated in 2004 and upgraded by the Malaysian Ministry of Higher Education to a university college. In January 2011 it was further upgraded to full university status and became Sunway University.

It is ranked among the top 2% of universities in Asia and rated as a 5-star institution by Quacquarelli Symonds. The University has also been awarded a 5-Star rating in the SETARA 2017 assessment of Malaysian Higher Education Institutions and is one of only eight universities in Malaysia to be awarded the Premier Digital Technology University status by the Malaysian Digital Economy Corporation.

To date, the University has drawn more than 26,000 students from over 90 countries to its vibrant, 880,000-square-foot campus. The university is structured into the following schools, each led by a dean and each comprising a number of departments, centres and institutes: School of Business, School of Science and Technology, School of Arts, School of Mathematical Sciences, School of Hospitality, Sunway Institute of Healthcare Development, The School of Interdisciplinary Studies - American Degree Transfer Program, and Centre for English Language Studies.

### Rankings:

Ranked 701-750 by the QS global world rankings 2021.

### Outcomes

#### Research

The research work has been initiated and the progress is detailed below;

One of the research scholars from Department of Biochemistry, JSS Medical College is working on “**Detection of antibiotic resistance genes in clinical isolates of *Escherichia coli* and *Klebsiella pneumoniae* using multiplex PCR its impact in the management of patients with sepsis**”. For this research, the team from JSS AHER, as per the preliminary data available, has held discussions with Dr. Chadrajit Lahiri’s laboratory, Department of Biological Sciences, Sunway University and they have found DnaK protein which is very commonly associated with antibiotic resistance. In order to check if the same protein is involved with the resistant micro-organisms found in our clinical isolates, the JSS AHER team are collecting the sensitive and resistant strains of *E. Coli* and *K. Pneumoniae*. In this process, they have collected about 10 resistant and sensitive strains of each bacteria which will be sent for sequencing in the due course of time. With the sequencing data, we hope to compare the results between the two set-ups.

<b>Collaborating Partner</b>	: <b>Cyberjaya university college of medical sciences, (CUCMS) Malaysia</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 23.11.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To facilitate exchange of information, resources, and experiences between the Student/Faculty of both Universities in research publication, teaching and supervision
- To foster collaborative Research, development of Teaching and Learning Materials
- To propose visiting/external Examiner

### Brief Overview of the Collaborating Partner:

Cyberjaya University College of Medical Sciences (CUCMS) is a private healthcare university which was established in 2005 in the city of Cyberjaya, Malaysia. The University is a top-tier healthcare university in Malaysia as reflected in the latest Ministry of Higher Education's SETARA ratings which has accorded CUCMS a 5-star (Excellent) rating on par with leading public universities. Back then it offered only two programmes in medicine and pharmacy, with 95 students in their first intake. In August 2009, the university relocated their main campus to the heart of the city to cater for their expansion.

Students can study across foundation, undergraduate and postgraduate studies. CUCMS offers more than 20 programmes including degrees and masters and doctorate level postgraduate research courses in a wide variety of disciplines including medical sciences, pharmaceutical sciences, psychology, physiotherapy, homeopathic medical sciences, business and biomedical technology engineering among others.

The university has an enrolment of 12,000 undergraduate and postgraduate students across five faculties, two academic centres, and six hospital teaching resource centres. The university's motto is "nurturing the Impact passion to care".

### Rankings:

By Times Higher Education World Ranking,

- 601+ Rankings 2020
- 101–200<sup>th</sup> Impact Rankings: Good health and well-being 2020
- 401–600<sup>th</sup> Impact Rankings: Quality education 2020

### Outcomes

#### Academic

Faculty & student exchange, training programmes for Postgraduate students between the institutions are to be planned in the future.

#### Research

Collaborative research, publications, Development of joint academic programmes is to be explored.

Due to the COVID-19 pandemic, the collective activities for the same between the institutions are yet to be initiated.

<b>Collaborating Partner</b>	: <b>Nesa Med Tech Pvt, Ltd, Bangalore</b>
<b>Type of Agreement</b>	: RCA
<b>Date of Signing the Agreement</b>	: 16.02.2017
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- Strengthen, promote and develop co-operation between Nesa Med Tech Pvt, Ltd and JSS AHER the on the basis of equality and mutual benefit.

### Brief Overview of the Collaborating Partner:

Nesa Medtech Private Limited is a medical device start-up working towards excellence in the Research & Development of Medical devices for emerging countries specifically India and believes in pursuing business through innovation and technology. This is focused on delivering minimally invasive therapeutic devices innovation to address social and economic burden.

Nesa Medtech is mentored and supported by Department of Biotechnology, Government of India and Karnataka Biotechnology and information technology services.

### Outcomes

#### Research

#### Project Sanctioned

One collaborative project has been provided extramural funding. The details are;

Title of the Project	Affordable and Minimally Invasive therapy for woman with symptomatic Uterine Fibroids
Amount	INR 49.00 Lakhs
Agency & Scheme	Biotechnology Ignition Grant (BIG) by BIRAC
Duration	03 Years
Status	Ongoing

#### Patent

A patent has been granted in which faculty member from JSS AHER, Mysuru is the co-inventor. The additional details are;

Title of the patent: A system and method for the ablation of uterine fibroids

Grant date: 27<sup>th</sup> August 2019

Term: 20 Years

<b>Collaborating Partner</b>	:	<b>Quantumzyme Pvt Ltd, Bangalore</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	13.12.2017
<b>Duration of Agreement</b>	:	10 Years

#### Objectives of the collaboration agreement:

- Collaborative Research and Development.
- Development of methods and technologies that are needed to address the critical national needs in the area of Bioinformatics

#### Brief Overview of the Collaborating Partner:

Quantumzyme is a biotransformation company based in Bangalore, focused on Clean and Green Chemistry. Customer centric research to enhance enzyme activity, selectivity and specificity by applying novel Quantum Mechanics, Molecular Modelling and engineering approaches. Quantumzyme's uniqueness lies in its advanced framework QZyme Workbench™ that offers advanced solutions for specific biocatalysis requirements.

#### Outcomes:

##### Academic

- 05 students of JSS AHER undergone internships
- 04 students were offered placement opportunities
- 03 Industrial experts visited the School of Life Sciences and involved their expertise on the development of curriculum for M.Sc., Bioinformatics program
- 02 students are pursuing joint PhD program

##### Research

Industry-academia mutual interest has led to increase capacity building in the niche area of bioinformatics focusing on protein structure and function. This interaction has led to the following two projects:

#### 1. ***Molecular detailing and delimiting the mechanism of action of industrial enzymes.***

In this research work, the following objectives are currently being carried out:

- ✓ Engineering natural enzymes for industrial- and pharmaceutical-usage.
- ✓ Bio-catalysis approach over other approach for the pharmaceutical manufacturing processes and
- ✓ Identifying hotspot for protein engineering.

#### 2. ***Use of Computational Methods to investigate enzyme-substrate interaction for Pharmaceutical Applications***”.

In this project, the investigators are working on:

- ✓ Elucidation of the mechanism of opening and closing states of enzymes through classical molecular dynamics simulation.
- ✓ Understanding the binding of substrate and co-factor influenced by the conformational change of IRED (Imine Reductases)
- ✓ To understand the role of the active site in catalysis.
- ✓ Identification of alternative amino acid for the better catalysis.
- ✓ Understanding the mechanism of the reaction.

The projects will strengthen the capabilities in establishing bioinformatics research and PhD student projects will lead for joint publications.

<b>Collaborating Partner</b>	: <b>Innov4sight Health &amp; Biomedical Systems Pvt. Ltd - Bangalore</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 13.12.2017
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- Collaborative Research and Development to expedite development of methods and technologies that are needed to address the critical national needs in the area of Bioinformatics

### Brief Overview of the Collaborating Partner:

Innov4Sight Health System are equipped (technically) to create one of the largest chain of technology driven Fertility Clinics across the globe within 5 years.

Innov4Sight Health System addresses the rapid reproductive aging problem with a Regenerative Medicine Solution for Male & Female Infertility that improves the physiological conditions and functions of the reproductive system for better Clinical Outcomes during ART procedures.

Their Regenerative Medicine based Therapeutics is addressing both Male & Female Infertility conditions such as: (a) Endometrial Defects incl. Thin Endometrium, Recurrent Implantation Failure (RIF), Recurrent Pregnancy Loss (RPL) & Partial Asherman's Syndrome, (b) Poor Ovarian Reserve (POR) & Primary Ovarian Insufficiency (POI), (d) Erectile Dysfunction & (d) Sperm Quality disorders such as Oligospermia & Azoospermia.

Vyabl is a digital health platform that is intended to serve as an ecosystem for fertility care from spreading awareness using questionnaire through diagnostics screening to facilitation of actual fertility procedures through aggregation service.

### Outcomes

#### Academic

- Student exchange - Three students of M.Sc., Bioinformatics completed dissertation work
- Laboratory hands-on-training was conducted for M.Sc., Bioinformatics students to handle the applications of various softwares.

#### Research

Industry-academia collaborative research has led to the clinical validation of autologous blood cell derivative- abcdtm for the management of repeated implantation failure (rif) and its *in-silico* analysis. The study analysed the prediction of a binding model that can used for the interaction of a known drug that can increase the thickness of the endometrium with a cell adhesion molecule receptor.



<b>Collaborating Partner</b>	: <b>Innovative Nano &amp; Micro Technologies, Bangalore</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 13.12.2017
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- Collaborative research & Development in the areas of drug discovery.
- Drug discovery and development with specific focus on clinical study/trials in dental practice

### Brief Overview of the Collaborating Partner:

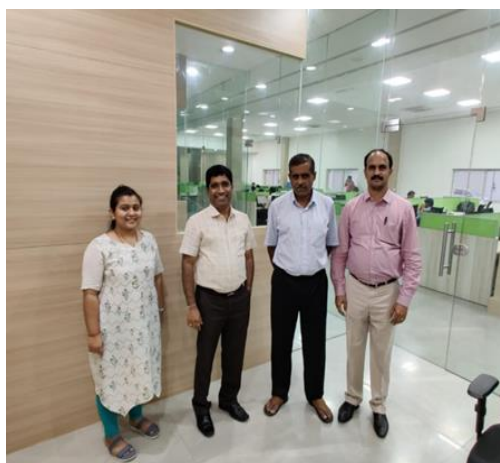
Innovative of Nano & Micro Technologies private Limited (INM Technologies) registered on 23rd January 2015 under companies Act 2013, Registration of Companies, Ministry of Corporate Affairs, Government of India, Bangalore, Karnataka State, India with the objective of offering services and innovative products in the area of nano and microtechnologies. They have the following capabilities;

- High-tech know-how, competencies and expertise in nanotechnology to meet industrial needs and strengthen industrial competitiveness in Asia, Europe, and USA.
- Expertise in the field of the Materials Engineering / Pharmaceutical Technology and service in advanced technology and product development.
- State of art facility for all Synthesis / deposition / characterization and testing techniques.
- Scale up process for the developed micro / nanomaterial's.

### Outcomes:

#### Academic

- A team from JSS AHER, Mysuru, visited INM Technologies, Bengaluru and held discussions on the opportunities for collaboration in research. The outcomes of the discussion were;
  - Updating to the current knowledge on development of niche products (Transdermal Drug Delivery and Oral Dispersible Films)
  - Characterization and evaluation of formulations developed in the institution
  - Support student internship/ project work



*Dr. D.V.Gowda, HoD, Dept. of Pharmaceutics, Dr. M.P. Venkatesh, Asst. Professor, Dept. of Pharmaceutics and Mrs. Deeksha R. Pai, Research Scholar, Dept. of Pharmaceutics visited INM Technologies*

- Industrial experts from INM Technologies - Mr. Pradeep Shivakumar, Mr. Andanayya Saraganachari & Mr. Kiran K Jadhav have visited JSS AHER and strengthened the **Nano lab facilities** at JSS AHER, Mysuru

## **Research**

### **Research Publications**

**Total No. of Publications:** 06

**Areas of Research Publication:** Drug delivery system, Therapeutics, Nanotechnology

**Cumulative Impact Factor:** 1.14

- 06 Research Projects for PG students from Pharmacy Domain are completed. The titles of the Projects are enumerated below;
  - Formulation development, evaluation and bioequivalence study of generic antihypertensive tablets
  - Precipitation inhibition technique to improve oral bioavailability of mefenamic acid
  - Formulation and evaluation of almond gum nanofiber containing cross-linking silver ions for antimicrobial wound dressing
  - Encapsulation of folic acid in almond gum-sodium alginate-polyvinyl alcohol electrospun fibres to increase its stability
  - Formulation and evaluation of nanosponge loaded topical gel for the treatment of psoriatic arthritis
  - Formulation and evaluation of paromomycin loaded liposomal gel for cutaneous leishmaniasis
- One research study has been undertaken by the Dental faculty which is completed.
  - Title of the research Project:  
*Evaluation of the efficacy of Tranexamic acid gel (INM formulation) on haemostasis of palatal donor site- a randomised controlled trail.*
  - Outcome of the research project:  
This study concluded that the use of haemostatic agents resulting in increased wound healing and post-operative pain. The results of the study could be applied for palatal wounds for achieving better haemorrhage control leading to reduced treatment time and decreased patient discomfort.

## **Consultancy**

A Consultancy project was carried out by the JSS Dental College and Hospital for a product developed by INM Technologies.

Title of the project:

*Testing of Tranexamic acid as a haemostatic agent*

Amount: INR 3.00 Lakhs

## **Ph.D Program**

Three employees from INM Technologies are pursuing their Ph.D studies at JSS AHER, Mysuru

The titles of their research works are;

- Development and formulation of wound healing dosage form
- Development and evaluation of nanobased ocular drug delivery system for Glaucoma
- Formulation and evaluation of nanoparticles drug delivery based multiple sclerosis disease condition

<b>Collaborating Partner</b>	: <b>Gulbrandsen Technologies (India) Pvt. Ltd, Gujarat</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 04.06.2018
<b>Duration of Agreement</b>	: <b>10</b> years

**Objectives of the collaboration agreement:**

- To facilitate collaborative research and development in the areas of New product development

**Brief Overview of the Collaborating Partner:**

Gulbrandsen Technologies is a Global company with business objective of manufacturing, processing, refining, transporting, extracting, exporting, importing all types of chemicals including basic chemicals, organic, inorganic, heavy and mixed chemicals, fertilizers, pesticides, pharmaceuticals, biological and compounds of all types. The company acts as civil engineers, mechanical engineers, structural engineers, automobile engineers, electronic engineers, chemical engineers, and engineers in all branches. The registered office of the company in India is situated in the State of Gujarat. Gulbrandsen Technologies manufactures low-cost chemical solutions for multiple industries including water treatment, personal care, intermediates, pigments and electronic etchants.

**Outcomes:**

**Research**

To strengthen academia-industry research collaboration, JSS AHER has carried collaborative research project and progressed in new product development with Gulbrandsen Technologies, Gujarat. The TIFAC Core in Herbal drugs division, JSSCPO in association with Federation of Indian Chambers of Commerce and Industry (FICCI) initiated potential industry collaboration with M/S Gulbrandsen Technologies (India) Pvt Ltd (GTIPL). Ms. Swapna Das, Joint Director, FICCI was instrumental for this collaboration.

The impact of MoU in terms of research till date is:

- Dr. Deepak Joishar, DGM, Research & Development Audit Compliance visited the TIFAC CORE in Herbal drugs, JSSCP, Ooty on 13<sup>th</sup> Feb 2018 to explore our strengths and potential projects. Following discussion with the faculty members, few areas of potential research interest were proposed.
- Dr. Deepak Joishar, DGM, R&D Audit Compliance and Mr. Sharath, Asst. General Manager- New Business Development had visited the JSSCP, Ooty on 12 July 2018 and discussed on the proposed research project. The research project for Rs. 3.25 lakhs (in three phases) has been accepted by the industry and work is in progress. The project was implemented and currently is in second phase.
- **Research Project in progress under this proposal:**

Project Title	Project Team
Development of Natural Anti-Perspirant	Dr. M. Sureshkumar, Dr. Gowthamarajan K, Dr. Jubie Selvaraj and Dr. Ashish Wadhvani

This research collaboration carries a weightage and will benefit JSS AHER rankings at NIRF-India and QS Rankings.

<b>Collaborating Partner</b>	: <b>Skanray Technologies Private Limited</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 05.07.2018
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

Clinical Data on products that are already certified and in market, Clinical Trials / Investigation for products under development.

### Brief Overview of the Collaborating Partner:

Skanray has a global presence in manufacturing and R&D and is a globally certified Medical Equipment Manufacturer (Retail/OEM) from India in the field of Diagnostic Medicine and Critical Healthcare. With its dedicated design teams in Europe and India, coupled with worldwide manufacturing facilities in India, Italy, and Latin America, Skanray Technologies is an internationally acclaimed firm in med-tech verse. Skanray presently has 80 plus patents going into 50 plus CE/FDA certified hi-end medical equipment in various categories that cater to all facades of healthcare delivery including but not limited to Diagnostic X-Ray systems, Surgical C-Arms, Dental Radiography Systems, Patient Monitoring Systems, Defibrillators, Critical Care Ventilators, Anaesthesia Workstations, ECG Machines, Central Nursing Systems and more. Skanray's facilities in India house the Manufacturing, Design & Development, Quality Control and Quality Assurance teams.

Skanray designs and manufactures products that comply with US FDA, UL and CE requirements. The plants are ISO 9001 certified, along with ISO 13485: 2003, ISO 14001: 2004 and OHSAS 18001 vaeditations. With a track record of over 100,000 installations in such a vast array of equipment Skanray is a true global company focusing on delivering premium products and strives to improve their quality healthcare.

### Outcomes

#### Research

Two consultancy projects worth INR 9,35,000 have been completed for devices of Skanray;

SI. No.	Device	Department	Total Amount (INR)	Status
1	ECG	Cardiology	350000	Completed
2	SKANMOBILE	Radiology	585000	Completed

Discussions are underway and in various stages for the clinical testing of the following devices of Skanray;

SI. No.	Device	Department
1	MIKROSCKAN	Radiology
2	SKAN C	Radiology
3	SKANRESPIRO	Anaesthesia
4	Skansiesta	Aneasthesia
5	Intra SKAN	Dental
6	SKANrevive Plus	Cardiology
7	Patient monitors	Cardiology

<b>Collaborating Partner</b>	: <b>Imaginarium (India) Pvt Ltd, Mumbai</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 24.07.2018
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- Jointly working on research projects, faculty, and staff development programmes.
- Attending activities organized by the parties.
- Conducting collaborative research programme of mutual interests.
- Undertaking Industrial visits to Imaginarium (India) Pvt Ltd.
- To undertake consultancy projects.
- Conducting expert lectures from Imaginarium (India) Pvt Ltd.
- Starting elective jointly.
- Providing training on software related to medical CAD/CAM technology.

### Brief Overview of the Collaborating Partner:

Imaginarium India Pvt. Ltd. is a 3D Printing company located in Mumbai, India. It has been in the field of 3D printing for over a decade and serves more than 5000 industries in more than 30 industrial sectors. It has the state-of-the-art facility with 22 production 3D printers working 24x7. It has over 250 skilled manpower to provide integrated solutions to realize new products. Over the years, it has grown to be Asia's largest service provider in 3D printing. Started with Jewelry Industry, Imaginarium expanded its services in Engineering sector encompassing Aerospace, Automotive, Electrical, Electronics, White Goods, Foundry, FMCG Packaging, Medical, Lifestyle etc. Imaginarium started a Dental Lab to produce 3D printed custom Crowns in 2007 and 3D printing for Healthcare has been in their focus and has a dedicated team of Biomedical Engineers to work on custom solutions.



## Outcomes

### Academic

The collaboration has created an opportunity for the faculty and students at the institute to pursue research projects. Student driven postgraduate dissertation projects were undertaken to enhance the research capabilities

Postgraduate students from dental departments have also taken up various topics under the MOU as short studies. The research activities are going on with focus on scientific publication in indexed academic and research journals.

### Professional Development & Capacity Building

Representatives of the company have visited the institution for CDE programme and conferences. Student/Faculty have visited Imaginarium for an enhanced learning experience with the primary goal of enriching the knowledge to curb the inquisitiveness towards the newer advancements and research in the respective field.

Two Expert meetings have been organized which has given scope and opportunity for academic and scientific research collaboration leading to scientific publications.

### Conferences Organized

A two days National Conference on “**Pharmaceutical Sciences 4.0**” - **Advancing the future of Pharma**, was organized on 8<sup>th</sup> & 9<sup>th</sup> March 2019 with the objective to impart knowledge and develop competencies of delegates (students) in the area of research & development, digitization, automated processes, artificial intelligence, machine learning, data analytics, 3D Printing, quality assurance and regulatory aspects.



*The Organizing Committee of “Pharmaceutical Sciences 4.0” with Speakers*



*Inauguration of 2 days National Conference on “Pharmaceutical Sciences 4.0”*

Mr. Guru Prasad, Director, Imaginarium, Mumbai presented about the future of 3D printing which will have very big impact in the manufacture of medical devices and Pharmaceuticals. Live demonstration of 3D printing was made where DNA double helix structure was 3D printed. This activity kindle the interest amongst the staff and students towards 3D printing

## Research

Interdisciplinary collaborative research has given opportunity for research projects in 3D printing for healthcare services. At present, three research studies have been taken under MoU with Imaginarium which is ongoing.

### **1) *Build Angle: Does it influence the internal fit and accuracy of 3-D printed occlusal splints? (A short study)***

Summary of the proposed research project to be done under MOU: 15 subjects will be selected based on the inclusion criteria of the proposed research project.

Dental models of these subjects will be sent to IMAGINARIUM, Mumbai under the MOU. The samples will be scanned, and occlusal splints based on 2 different build angles (0° and 135°) will be 3-D designed and manufactured.

### **2) *Comparison of Marginal integrity of the Cobalt-Chromium Crowns using Conventional Technique, CAD-CAM, 3D Printing Technique: An invitro study.***

Summary of the proposed research project to be done under MOU: In this study 15 cobalt chromium metal crowns are to be fabricated using 3D printing, which would be fabricated in Imaginarium.

### **3) *A comparative evaluation of hardness and wear resistance of a 3D printed and a conventional temporary restorative material***

Purpose and significance of Research: Hardness is one of the mechanical characteristics which is used to predict the wear behaviour of the material. It is related to ease of finishing and polishing, too. There is controversy about the correlation between the hardness of a material and its wear resistance. There are a few studies about the wear and hardness of interim materials for fixed restorations

The MOU gives a wide range of options and opportunities to the students and the faculty of the institution to explore the options in the field of 3D Printing.



<b>Collaborating Partner</b>	: <b>Seragen Biotherapeutics Private Limited, Bengaluru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Student exchange
- Faculty exchange
- Joint seminar/conference/
- Workshop
- Joint publication
- Joint Research
- Student Clerkship

### Brief Overview of the Collaborating Partner:

Seragen Biotherapeutics Private Limited is having its registered office at: Suite 459,677,1<sup>st</sup> Floor, 27<sup>th</sup> Main, 13<sup>th</sup> Cross, Sector 1, HSR Layout, Bangalore-560102, India and R&D Centre at: Bangalore Bio Innovation Centre, Helix Biotech Park, Electronics City Phase 1, Bangalore, India. It is a fertility only biotech venture using Regenerative treatments with multiple on-going clinical and pre-clinical stage programs. Seragen's fertility-based research for regenerative medicine is engaged in the discovery, development and clinical validation and implementation of novel therapeutics designed to treat unmet infertility conditions.

The most advanced programs at the company are focused on the development of autologous stem cell-based therapy for male infertility. Its network and collaborations with leading academic and research institutions and is constantly innovating to produce effective formulations. It has a state-of-the-art lab facility incubated at Bangalore Bio innovation Centre (BBC) which is promoted by KBITS, Dept of IT, BT and S&T, Govt of Karnataka and supported by Department of Biotechnology (DBT), Govt of India. It also has many strategic tie-ups with several R&D organization and many hospitals across the country.

### Outcomes

#### Academia

- ✓ 01 joint PhD program is ongoing
- ✓ Industry expert involved to strengthen UG Biotechnology program
- ✓ M.Sc., Bioinformatics student exchange for undergoing internship

#### Research

- ✓ Industry-academia collaborative research has led to the establishment of standardized protocol for processing of the umbilical cord blood (UCB) to isolate maximum total nucleated cell count without compromising on the quality of stem cell yield.

The project will strengthen the capabilities in establishing bioinformatics research and PhD student projects will lead for joint publications.

<b>Collaborating Partner</b>	: <b>GlaxoSmithKline (GSK) Asia Private Limited, Bengaluru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 25.01.2020
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

Training and Research in Pharmaceutical Sciences

### Brief Overview of the Collaborating Partner:

GlaxoSmithKline Asia Private Limited, Bengaluru, Karnataka, India is having its registered office at Patiala Road, Nabha - 147201 (Punjab) and one of its offices at No. 5, Embassy Links, SRT Road, Bangalore - 560052. GSK is part of a science-led global healthcare group of companies engaged in three primary areas: pharmaceuticals, vaccines and consumer healthcare products. GSK is the market leader in many therapeutic areas and in preventive healthcare, with GSK Vaccines being the frontrunner in India. Its annual turnover is close to Rs. 5000 crores and employs over 4,500 people in India.

### Outcomes:

#### Academic

- The industrial experts from GSK have visited the Pharmacy Colleges and have provided their expertise to the faculty members and students by delivering guest lectures.

### Guest lectures

#### Guest lectures by Experts from GSK

Sl. No.	Topic	Resource Person from GSK	Date
1	Basic Fundamentals of Regulatory Affairs and Introduction to Quality Standards for Regulatory Compliance	Mr. Mahesh Patil Regulatory Affairs Senior Specialist Global Regulatory Platforms and Delivery (GRPD) Research & Development, GlaxoSmithKline, Bengaluru	25 <sup>th</sup> October 2019
2	Marketing Authorization Procedures in USA <ul style="list-style-type: none"> <li>NDA 505(b)(1) of the FD&amp;C Act (Application for approval of a new drug)</li> <li>NDA 505(b)(2) of the FD&amp;C Act (Application for approval of a new drug that relies, at least in part, on data not developed by the applicant)</li> </ul>	Mr Raj K Jain Regulatory Specialist – CMC Renewal Regulatory Platforms and Delivery (GRPD) Research & Development, GlaxoSmithKline, Bengaluru	15 <sup>th</sup> November 2019

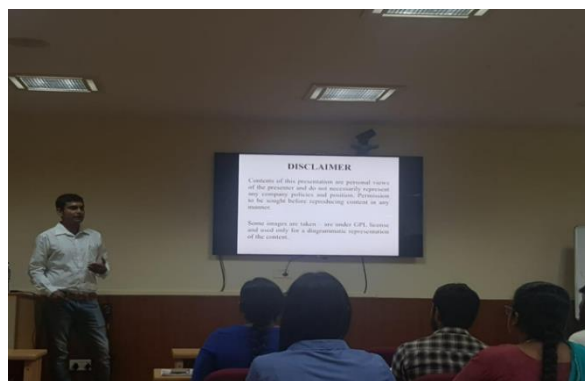
	ANDA 505(j) of the FD&C Act (Application for approval of a generic drug product)		
3	Registration Data Management /Regulatory Information management/ Records management / Archival	Mr Sumit Mohanty Manager, Registration and Records Management & Systems, Global Regulatory Platform & Delivery Global Regulatory Platforms and Delivery (GRPD) Research & Development, GlaxoSmithKline, Bengaluru	22 <sup>nd</sup> November 2019
4	Overview - Regulatory Publishing	Mr. Basavalinge Gowda BS Submissions Delivery Specialist – Senior, Global Regulatory Platforms and Delivery (GRPD) Research & Development, GlaxoSmithKline, Bengaluru	10 <sup>th</sup> Feb 2020

The talks by industry experts on the latest developments and processes in regulatory affairs have enriched the knowledge of Students and Staff of JSS Colleges of Pharmacy, Mysuru and Ooty.

*Mr. Basavalinge Gowda B S interacting with students*



*Mr. Mahesh Patil session on GRPD*



### Student Internship

- Five students from M.Pharm – Pharm. Regulatory Affairs have carried out their internships with stipend of Rs. 15000/- (Rs. Fifteen thousand only) per month for a duration of 9 months.
- Ms. Shikha Tambe from JSSCPM was offered a job at GSK Asia Private Limited, Mumbai office with CTC of Rs. 4.5 Lakhs

### Research

**Total No. of Publications: 01**

**Areas of Research Publication: Neuroanatomy, Mental retardation.**

Sl. No.	Title of the Paper	Journal details
1	Cerebral palsy with mental retardation: A case report	International Journal of Pharmaceutical Research; 2020; 12(1): 381-383.

<b>Collaborating Partner</b>	: <b>Accreate additive labs private limited, Bengaluru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- Joint work on research projects and faculty development programs.
- Attending and supporting events organized by the other party leading to continuous interdisciplinary education and learning.
- Identifying, securing grants, and successfully completing joint research projects
- Commercializing and implementing market new solutions and offerings for enhanced learning and understanding of medical appliances and products.
- Undertaking consultancy projects.
- Provide reverse engineering, scanning and digital design to 3D print services for medical appliances, products, and guides.

### Brief Overview of the Collaborating Partner:

Accreate additive labs private limited located at Bengaluru, Karnataka, India is a 3D printing and designing company. Accelerating Growth through innovation (Agnii), a Government of India platform has recognised Accreate Labs for its innovation and has included it in the program. Accreate Labs is unique in its ability to model human anatomy and pathology using Mimics innovation Suite, 3D print human models with soft material with various colours, bringing good tactile functions into human models.

The MoU was signed in 2019 for the purpose of Consultancy, Training and Research in 3D printing and provide reverse engineering, scanning and digital design to 3D print services for medical appliances and products

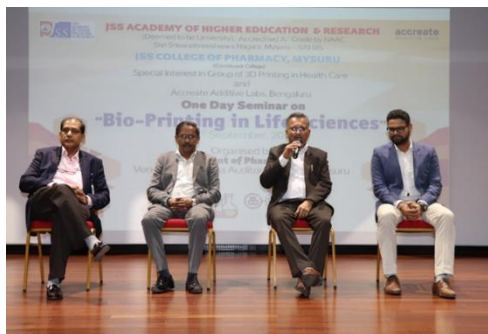
### Outcomes

#### Academic

#### Seminar organized

JSS college of Pharmacy, Mysuru in collaboration with Special interest group of 3D printing in healthcare and Accreate Additive Labs, Bengaluru had organized a one-day seminar on “**Bio printing in Life Sciences**” on 14th September 2019 at JSS college of Pharmacy, Mysuru

The objective of seminar was to bring together research scholars, professors, academicians, professionals from industry and business delegates on to one platform to promote and discuss about the emerging use of 3D bio printing in life sciences.



### Dignitaries for seminar on Bio printing in Life Sciences

Discussions were held about how a 3D experience platform can be created for life sciences and how 3D technologies help in advancing the pace of discovery of new drugs and medicines and enabling the life science industry to provide holistic patient centric experience.

### Research

JSS AHER, Mysuru in collaboration with Accreate Additive Labs, Bengaluru has submitted 04 Projects for funding to various agencies.

### List of Submitted Projects

#### 1. **Centre of Excellence for 3D Bioprinting in Translational Research in Healthcare**

Date of Submission- 23-02-2020

Agency - Intensification of Research in High Priority Area (IRHPA)-DST SERB

Amount – INR 20 Crore.

Principal Investigator- Dr. T.M. Pramod Kumar

Co-investigators- Dr. C. Saravana Babu Dr. SubbaRao V. Madhunapantula Dr. Srinivas Doreswamy

Dr. Prashanth S Dr. M.P. Gowrav

Industry Collaborator- Mr. Ravishankar SN Accreate Additive Labs, Bengaluru.

Status: Preliminary accepted & Not considered in final

### About the Project:

This Centre of Excellence (CoE) focussed on Translational Research in Healthcare covering Biomedical devices, Implants, 3D Bioprinted tissues as Drug Testing platforms and cosmeceuticals. Scientific rationale: 3D Bioprinting is now widely accepted as a more effective platform for synthesis of human and mammalian tissues for applications across cosmetics testing (due to ban on using animals) and Drug testing. Precision Medicine, a combination of gene mapping and identifying drug molecules is also a top area leveraging 3d bioprinting. This CoE intends to work collaboratively with all players in the ecosystem, to strengthen research outcomes by helping the researchers leverage 3D bioprinting.

Scientific Objectives:

The CoE has outlined FIVE KEY scientific objectives for the CoE, namely:

- Accelerate product development process for cost effective biomedical devices, by assisting prototype development of implants with drug eluting properties
- Support researchers with expertise and equipment to use bioprinted platforms for drug testing
- Provide early-stage validation through prototyping/high through put screening
- Enhance effectiveness of screening using bioprinted tissues in early stages for drug testing, to improve quality of outcomes

- Develop high quality manpower skilled in 3D bioprinting and its applications on a continuous basis by running training programs.
2. ***Designing and making a pro-geriatric pill box to assist geriatric patients in adhering to the right medicines at the right time and in the right dosages and enable intervention of monitoring geriatrics consultant in case of severe non-compliance.***

Date of Submission: 02-03-2020

Agency- BIRAC-PACE (Promoting Academic Research Conversion to Enterprise)

Amount-49.50 Lakhs

Principal Investigator- Dr. T.M. Pramod Kumar

Co-investigators- Dr. C. Saravana Babu, Dr. M.P. Gowrav, Dr. Sri Harsha Chalsani

Industry Collaborator- Mr. Jitendra Singh, Accreate Additive Labs, Bengaluru

Status - Not considered

Aim/Objective of the Proposal

To assist geriatrics patients in adhering to the right medicines at the right time and in the right dosages and enable intervention of a monitoring geriatrics consultant in case of severe non-compliance.

Objectives

To design and create a Pro Geriatric pill box with artificial intelligence to –

- Enhance quality of life for geriatric patients by ensuring better compliance to prescribed medication
- Equip care givers/patients to provide right medication
- Proactively intervene by activating contact with patient in case of severe non-compliance.

### 3. ***Faculty Development Program on “3D Printing and Design in Healthcare”***

Date of Submission: 14-03-2020

Proposal Number & Agency- (AICTE), New Delhi

Amount- 2.00 Lakhs

Principal Investigator- Dr. Prashanth S

Co-investigators- Dr. T.M. Pramod Kumar, Dr. M.P. Gowrav

Status: Under Consideration

About the Faculty Development Program:

The interest around 3D-printing has risen spectacularly within the last few years. With continued progress, it has the potential to revolutionize the advances in 3D printing and technology and has expansive applications in surgery, personalized medicine, diagnostics, and drug discovery.

This workshop was designed to look at a wide range of technologies, applications, and methodologies within the 3D printing in the life sciences space. With a well-known track record for delivering high-quality agenda, this program will include talks from some of the renowned foremost innovators in materials, applications, digital dentistry, scaffolds, cell containing constructs and tissue regeneration, and tissue engineering.

**4. Enhanced instruments/emergency device kits for minor procedures in ENT and Dental while increasing patient and medical worker safety during COVID 19/SARS/Other exigencies in compliance with latest advisories.**

Date of Submission: 14-05-2020

Agency- BIRAC-COVID 19 (Under consideration)

Amount- 50 Lakhs

Principal Investigator- Dr. B. Nandlal

Co-investigators- Dr. T.M. Pramod Kumar, Dr. M.P. Gowrav

Industry Collaborator- Mr. Ravishankar SN, Accreate Additive Labs, Bengaluru

Status - Under Consideration

ENT and Dental examinations for minor procedures are now curtailed and cannot be done until additional safeguards are put in place.

Current availability of instruments needing sterilization before reuse is inadequate. We propose a cost-effective disposable concept-based emergency examination kits consisting of:

- Modified ENT mouth mirror, Nasal/Ear speculum, Tongue depressor.
- Multi ended dental instruments with modified ergonomic handles and Rubber dam clamps in which the aerosol from the patient's mouth is fully contained on the operator's side while performing the procedure.

So, these onetime use devices ensure the safety of the procedures.

**Ongoing Research Project**

Apart from the above four projects, the following research project is ongoing;

***Designing and 3D Printing PNS related Drug eluting stents***

Principal Investigator- Dr. Bharathi M & Dr Amulya

Co-investigators- Dr. T.M. Pramod Kumar

The system consists of two main components: (i) the MicroFlow Spacer and (ii) the Deployment Guide. The MicroFlow Spacer is a membrane reservoir that surrounds a catheter shaft. The reservoir has several hundred precision-formed micropores that permit slow seepage of an instilled therapeutic agent into the targeted region. The catheter shaft has a one-way valve to prevent backflow and a set of flexible retention wings to secure the device within the ethmoid bulla. The Deployment Guide consists of an access probe and a delivery sheath that work in concert to prepare the ethmoid complex for Spacer implantation.

<b>Collaborating Partner</b>	: <b>Triphase Pharmaceuticals Pvt Ltd, Mysuru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- To work collaboratively to expedite development of methods that are needed to address the national needs.
- To undertake research projects that will provide solutions to the oral health concerns of the society.
- To develop products that can help reduce health burden in the society.
- To develop technologies which can enhance health delivery.

### Brief Overview of the Collaborating Partner:

Triphase Pharmaceuticals pvt. ltd is an innovative and budding enterprise primarily believing in the prevailing scientific emphasis on Health and Wellness and embodies the vision and concept of “Prevention over Cure” to help manage a disease. Triphase was founded in 2009 by Shri. Aditya Desiraju and Dr. Shrilakshmi Desiraju, whose far-sighted vision is the present stature of Triphase. Since its inception, Triphase has been instrumental in delivering conceptual solutions in the field of healthcare, an extremely sensitive province in India. Triphase has been dedicated to research on probiotics and its inter-related areas in prebiotics, enzymes, and mineral enriched yeasts. Triphase has successfully developed some unique probiotic and related ingredients. The products are designed to help manage a disease with its range of probiotics, pre-biotics, and specialty enzymes for the gastrointestinal, gynecology, metabolic syndrome disease areas.





## Outcomes

### Research

The collaboration has benefitted in having scientific research projects resulting in scientific research papers. Three Research Projects were planned and executed, out of which one has been completed and published in academic journal which is now in the process of commercialization. The second research project is also completed. This is in process of scientific research publication. The third research project is ongoing.

#### Completed Research Projects:

- Comparison of Antimicrobial Efficacy of Cinnamon Bark Oil Incorporated and Probiotic Blend Incorporated Muco-adhesive Patch Against Salivary Streptococcus Mutans In Caries Active 7-10-Year-Old Children-an In-vivo Study. ***In the process of commercialization of the mucoadhesive patch prepared.***
- Efficacy of Probiotic containing gummies on the salivary S.mutans among caries active children.

#### Ongoing collaborative research project:

- Comparative evaluation of Antimicrobial Efficacy of a Novel Bacteriocin and Calcium Hydroxide as an Intracanal Medicament Against Enterococcus Faecalis Biofilm- An in vitro Study

### Research Publications

**Total No. of Publications: 01**

**Areas of Research Publication:** Oral Health & Microbiology

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Comparison of Antimicrobial Efficacy of Cinnamon Bark Oil Incorporated and Probiotic Blend Incorporated Muco-adhesive Patch Against Salivary Streptococcus Mutans In Caries Active 7-10-Year-Old Children-an In-vivo Study	International Journal of Clinical Pediatric Dentistry 2020; Vo1 13, issue 7 (Sept – Oct Issue)	-	-

### Patents:

- 02 Patents on dental products are under development for the following;
  - Mucoadhesive patch
  - Intra canal medicament

<b>Collaborating Partner</b>	: Scitus Pharma Services Pvt. Ltd. Chennai
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- Research and development of pharmaceutical in generic drug development through clinical research
- Faculty exchange programs
- Student internship and placement
- Education and training programs

### Brief Overview of the Collaborating Partner:

Scitus Pharma Services Private Limited, Chennai having its registered office at: Module 36, SIDCO Multistoreyed Complex, SIDCO Industrial Estate, Thirumazhisai, Chennai-600 124, Tamilnadu, India. It is a clinical research organization in Chennai, Tamilnadu. Its primary focus is research and development of pharmaceutical and biopharmaceutical drug products and support for pharmaceutical and biopharmaceutical industries in generic drug development through clinical research. They have the latest state-of-the art sophisticated bioanalytical instruments, which include Waters Xevo TQS Micro and Waters Xevo TQD systems and a host of supporting equipments, instruments and IT infrastructure that meet global standards.

### Outcomes:

#### Academic

- One expert has visited JSS AHER and provided guidance on improving the clinical research
- One student from JSS AHER has undergone internship.

#### Infrastructure

### Establishing Bioavailability and Bioequivalence (BABE) centre at JSS Hospital, Mysuru

- JSS AHER has initiated efforts to start BABE Center at JSS Hospital, Mysuru.
- For establishing the same, Scitus Pharma Services is providing active support.
- The following activities have been performed with the support of Scitus for establishment of BABE centre;
  - Sought assistance in filing the application to establish BABE center
  - Enlisted standard operating procedures required for filing application
  - Identified the place and prepared the Floor plan.
  - Identified the various activities involved in BABE studies
  - Enlisted Personnel requirements and developed organogram of proposed BABE center
- The establishment of BABE center would greatly support and further strengthen the clinical research activities at JSS AHER. Mysuru.

#### Research

One of the employees of Scitus is pursuing PhD at JSS AHER.

<b>Collaborating Partner</b>	: <b>Jagdale Industries Pvt. Ltd (Juggat Pharma), Bengaluru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 years

#### Objectives of the collaboration agreement:

- Consultancy, Training and Research in Pharmaceutical Sciences
- Formulation development for drugs.

#### Brief Overview of the Collaborating Partner:

Jagdale Industries Pvt. Ltd (JIPL), Bengaluru is a part of the well-established and one-of-the-oldest industrial family group of Bengaluru: 'the Jagdale family'. The roots of JIPL go back to 1939 when Associated Drugs Company Ltd., was set up and to the contributions of Late Shri. Radhakrishna Jagdale, founder Jagdale group. Today, the third-generation leadership team remains committed to the mission statement: excellence through quality and innovation. Jagdale Industries Pvt. Ltd has pioneered several products including unique food, beverage, nutraceutical and pharmaceutical formulations, in line with the nation's needs and market requirements.

Jagdale Industries Pvt. Ltd operates through SBU (Strategic Business Unit) concept. The SBUs are Juggat Pharma division, Jagdale Healthcare division, Jagdale Lifesciences division and Jagdale Foods division. Associate organizations of the Jagdale family includes Jagdale Scientific Research Foundation (JSRF) and Glen Loren Plantations Private Limited, which add value to the core business of Jagdale Group.

#### Outcomes:

#### Research

- As a part of MoU between JSS Academy of Higher Education & Research, Mysuru and Jagdale industries Pvt Ltd. Bengaluru, Four funded project proposals worth INR 7.35 lakhs were sanctioned for investigation of efficacy and genotoxicity of one of their nutraceuticals formulations viz. Mulmina.
- The details of the Projects are enumerated in the table below

Sl. No.	Title	Sanctioned Amount (INR)	Status
1.	Evaluation of anti-stress effects of MULMINA™ against chronic unpredictable mild stress model in mice	1.75 Lakhs	Project completed and report has been sent.
2.	Evaluation of anticlastogenic activity of MULMINA™ and swertiamarin using zebrafish embryo and mice model	1.36 Lakhs	Project completed and report has been sent.
3.	Evaluation of memory impairment and anti-epileptic activity of tiagabine in the presence and absence of MULMINA™	1.33 Lakhs	Project completed and report has been sent.
4.	Evaluation of anti- thrombocytopenic activity of MULMINA™ against anticancer drug induced and liver cirrhosis induced thrombocytopenic model in rats	2.91 Lakhs	Project is on going

<b>Collaborating Partner</b>	: <b>The Sadvaidyasala (B V Pundit's Traditional &amp; Herbal Healthcare), Pvt., Ltd, Nanjangud</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 17.02.2020
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement

- To recognize 'Sadvaidyasala Private Limited' as a collaborative company to support the research undertaken in JSSAHER.
- To support young researchers for the award of degrees and their application for grants.
- To collaboratively undertake research especially focused on finding novel drug targets, isolation of compounds of medicinal value from herbal products.
- To share competent and relevant services like providing Ayurvedic formulations to ensure quality research in finding novel drug targets.
- To undertake joint scientific projects in the field of drug development.
- To patent the identified compounds and to publish papers in high impact factor journals.

### Brief Overview of the Collaborating Partner:

Shri B.V. Pundit established Sadvaidyasala in the year 1913. "Sadvaidyasala" meaning the institute of Good Medicine, is one of the oldest Ayurvedic medicines manufacturing Industry in Karnataka. Although Shri B V Pundit started the company with a very modest range of Ayurvedic preparations, the response to the very first product, Nanjangud Tooth Powder, encouraged him to increase the production in line with demand and also expand on the range of products.

In 1954 Sadvaidyasala became a Private Limited Company. Today being in its 106th year since formation the Company is blessed to have retained the value in the name of B.V.Pundit and the goodwill of its Customers for over ten decades. The products manufactured under the Brand Name of B.V.PUNDIT'S are recognized and appreciated for its Quality and efficacy to date.

### Outcomes

#### Research

The team from JSS AHER, Mysuru is working on two projects;

#### 1) *Elucidating the molecular mechanisms modulated by Shivagutika treatment in breast cancer cells*

**Progress made on the project:** Procurement of Shivagutika capsules Batch 52, Batch 53, Batch 54 and Batch 57. Serial extraction of Shivagutika using hexane, dichloromethane, ethanol through Soxhlet apparatus and water extraction by constant stirring method. The percentage yield of each extract was calculated for batches 52 and 53 and cytotoxicity assay was done using SRB assay on MDA-MB 468, MCF-7 and MDA-MB 231 breast cancer cell lines and the total phenolic estimation and analysis of phenolic compounds using HPLC was done.

#### 2) *Bioactive guided fractionation of Shivagutika for identifying anti breast cancer agents.*

**Progress made on the project:** In vitro studies are being performed.

### Outlook/ Future Ahead

- Sadvaidyasala has agreed to provide other ayurvedic formulations, like Kanchanara Guggulu, Guggulutiktaka Ghrita, Nishamalaki Churna for further research activities in pursuing the search for molecular mechanisms of action of Ayurvedic formulations as well as looking for new active principles with an intent of developing novel herbal drugs and drug delivery systems.

To continue the research activities of use of ayurvedic formulations in treatment of prostate, cervical, lung cancers and in chronic disorders

<b>Collaborating Partner</b>	: <b>Embiotic Laboratories Private Limited, Bengaluru (ELPL)</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 19.05.2020
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Joint Research Activities
- Faculty / Expert visits
- Student internship
- Student recruitment
- Consultancy

### Brief Overview of the Collaborating Partner:

Embiotic Laboratories Private Limited is a well-established three-decade old Pharmaceutical Company based at Bangalore. Embiotic Laboratories Private Limited is engaged in marketing of own Branded Formulations as well as into Contract Manufacturing Services. Modern GMP Certified Manufacturing Unit of ELPL is located at Kumbalagodu, Bengaluru. The Company is having three facilities namely:

- Quality Assurance and Quality Control
- R and D
- Manufacturing.

The facility is equipped to manufacture various pharmaceutical dosage forms such as tablets, capsules, liquid orals, semisolid preparations like ointments. It also has equipment's to facilitate packaging. Embiotic has products under their own name, as well as they do contract manufacture.

### Outcomes

#### Research

- JSS AHER, Mysuru has initiated the collaboration and as outcome - Innovations and research opportunities are expected.
- Mr Harish Jain, Director, ELPL visited JSS AHER and held discussions with the staff and students and suggested collaborative research in the following areas;
  - Use of Xanthan gum to minimise the sedimentation problem with suspension as an innovative idea as practiced by the company.
  - Development of EpiPen like device with the ability to administer a predetermined amount of dose with the ability to change only the needle to avoid using thousands of disposable syringes once the COVID-19 vaccine comes out.
  - Improve the dispersability of chewable tablets as well as the opportunity for a formulation with Vitamin A.

**Consultancy Projects** The following consultancy projects are ongoing;

- Vitamin A Pediatric Oral Solution IP 1.0 lac IU per ml
- Iron & Folic Acid Syrup
- Sub lingual Tablets Platform
- Cost Effective Pantoprazole Tablets IP 40mg

Taste Masked Chewable Paracetamol Tablets 125mg

<b>Collaborating Partner</b>	: <b>Denovo Biolabs Pvt. Ltd. Bengaluru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 13.07.2020
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Joint Research Activities
- Faculty / Expert visits and talks
- Technical Guidance
- Organizing Joint seminars and workshops

### Brief Overview of the Collaborating Partner:

Denovo Biolabs Pvt. Ltd, a Company incorporated under the Companies Act 2013 and having its Registered office at: IBAB Campus, Biotech Park, Electronics City Phase 1, Bangalore, Karnataka. Denovo Biolabs is specialized in product development through R&D and innovation for laboratory diagnostics and medical research. They develop quality Immunological tools to serve unmet demands of the industry. They are in development of biopharmaceutical technologies to deal with Global healthcare needs in terms of accessibility and affordability of drugs. Denovo Biolabs provides wide range of customized services to Pharmaceutical, Biotechnology industries and Academic institutions. They also provide “end to end” cost effective Pharmacovigilance solutions to Pharmaceutical, Biotechnology and Medical Device companies across the globe. Denovo Biolabs develops ELISA tools for quantitative estimation of biopharmaceutical drug level, such as humanized, monoclonal antibodies and recombinant protein for treatment of several diseases.

### Outcomes

#### Academic

As a part of the academia and industrial collaborative efforts, Ms. Varsha Reddy SV, a full-time doctoral student, Dept. of Biotechnology & Bioinformatics, Faculty of Life Sciences, JSS AHER, Mysuru, has been conferred with an prestigious **Prime Minister’s Fellowship for Doctoral Research Scheme in the year 2020** to carry out the research work on “Development of a cost-effective immunodiagnostic assay and novel immunotherapeutics against sensitized house dust mite aeroallergens in allergic asthmatics”.

Prime Minister’s Fellowship for Doctoral Research scheme is a prestigious initiative of Science and Engineering Research Board, Department of Science & Technology, Government of India towards the advancement of university research engagements in line with industry requirement. The scheme encourages full time PhD scholars to pursue research in “focus areas” identified by industries as well as of national priorities. There are 100 slots of fellowships available annually to researchers to pursue PhD in reputed technology and research institutions in India. Federation of Indian Chambers of Commerce & Industry (FICCI) on behalf of SERB implements the scheme.

The PM fellowship support is sponsored jointly by Department of Science and Technology (DST) - Science & Engineering Research Board (SERB), Gol, and industry partner, Denovo Biolabs Pvt. Ltd., Bengaluru, for a maximum period of four years, coordinated by The Federation of Indian Chambers of Commerce & Industry (FICCI).

## PM Fellowship Awardee for doctoral research



Ms. Varsha Reddy S V, Department of Biotechnology & Bioinformatics, FLS, JSS AHER

- **Fellowship amount:** INR 80,000/-
- **Academic Guide/Mentor:** Dr. Kiran Kumar M N, Assistant Professor, Department of Biotechnology & Bioinformatics, FLS, JSS AHER.
- **Industry Mentor:** Mr. Manjunath S Devaramani, Director, Denovo Biolabs Pvt. Ltd.

### Research

As a part of the industry-academia collaboration, the following research initiative has been taken as a part of the on-going research activities;

1. To develop accurate and rapid diagnostic detection method for prevention, diagnosis, and management of allergic diseases and
2. To formulate allergen specific immunotherapy to patient needs.

Research meeting with Denovo Biolabs Pvt. Ltd. was held on 08<sup>th</sup> Oct 2020 at Department of Biotechnology & Bioinformatics, FLS, JSS AHER. The following research initiatives were planned to strengthen the collaborative effort;

- ✓ Exchange of a PhD scholar to take up the research work at Denovo Biolabs Pvt. Ltd. and support activities by providing technical support.
- Application for joint funding from DBT-BIRAC PACE was initiated.

<b>Collaborating Partner</b>	: <b>Global Health City, Chennai</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 19.03.2016
<b>Duration of Agreement</b>	: 5 Years

#### Objectives of the collaboration agreement:

- To facilitate internship training of Pharm D students and post graduates in clinical departments.
- To promote collaborative research and career opportunities between partnering institutes

#### Brief Overview of the Collaborating Partner:

Gleneagles Global Health City (GHC), the sprawling 21-acre facility located in Perumbakkam, Chennai is the largest facility of Gleneagles Global Hospitals India. With a capacity of over 1000 beds and accreditations from leading agencies, the facility is Asia's most trusted and leading Multi-Organ Transplant Centre. The hospital has undertaken several path-breaking Liver, Neurology, cardiology, Lung and Kidney procedures. It is recognized by several international and national level accrediting agencies. World-class infrastructure, dedicated staff and a commitment for medical excellence are the USPs of this facility. The hospital has several achievements to its credit and continues to work on several pioneering procedures.

#### Outcomes:

##### Academic

The students from JSS AHER underwent a clinical internship programme for a period of two months as a part of student study exchange at Global Health City, Chennai. The students who have completed this programme at GHC have gained knowledge and experience in clinical pharmacy activities under the mentorship of Dr. C. Emmanuel, Director- Academics and Research, GHC and Dr. S. Ponnusankar, Professor-Head, Dept. of Pharmacy Practice. Primarily, Pharm. D students and graduates of JSS AHER underwent Internship in Clinical Pharmacy services at GHC, Chennai for a period of two months in Hepatology, Oncology, Neurology and nephrology departments.

- A total of **30 students** have undertaken the internship.
- During their internship programme, they learn the therapeutic monitoring of diseases and appreciate the management of such diseases by clinicians and pharmacists alike.
- The students expressed that the learning experience in the hospital helped them in better understanding on management of diseases, health care system implemented and the role of a clinical pharmacist in a hospital setting.

Sl no	Name	Department
1	Mr. A Alex	Gastro-Enterology
2	Ms. R S Sneha Soundharya	Nephrology
3	Ms. S J Lakshmi	Oncology
4	Ms. S Zunitha Begaum	Rheumatology
5	Mr. Gokulesh Kumar A E	Oncology
6	Reima Elizabeth Jacob	Hepatology
7	Ritty Augustine	Hepatology



8	Anju Rose	Hepatology
9	Rayes Ahamed J	Neurology
10	Thirupavai V	Hepatology
11	Elmutaz Belah Mohammed Abadalhafez Mohammed	Cardiology
12	Balaji S	Hepatology
13	Gali Srinanda	Hepatology
14	Keerthana A	Hepatology
15	Nandini R	Neurology
16	Vignesh Kumar K	Neurology
17	Jeyaram Bharathi J	Neurology
18	Melve Elsa Varghese	Neurology
19	Niranjana Nair	Nephrology
20	Thomas Eipe	Nephrology
21	Lalduhawmi T C	Neurology
22	Lalramengmawii	Neurology
23	Asem Veeves Singh	Hepatology
24	Shekhar Sanjayrao Deshpande	Oncology
25	Manisha S	Neurology
26	Asish Kumar Saha	Hepatology
27	Hassan Elrufaie Hassan Abdalla	Cardiology
28	Preetha.S	Neurology
29	Priyatharisini.P	Neurology
30	Bhagirati.S	Neurology

<b>Collaborating Partner</b>	: <b>VGM Hospital, Coimbatore</b>
<b>Type of Agreement</b>	: <b>MoU</b>
<b>Date of Signing the Agreement</b>	: <b>20.07.2016</b>
<b>Duration of Agreement</b>	: <b>5 years</b>
<b>Date of Renewal</b>	: <b>19.06.2019</b>

#### Objectives of the collaboration agreement:

- To facilitate internship training of Pharm D students and post graduates in clinical departments.
- To promote collaborative research and career opportunities between partnering institutes

#### Brief Overview of the Collaborating Partner:

VGM Gastro Centre is materializing of the dream that Dr.V.G. Mohan prasad who once had a dream where patient safety, care & comfort come above all else. The centre houses most advanced state-of-the-art facilities which make diagnosis more accurate and in turn makes every treatment more focussed. The Surgical Gastroenterology facility is highly competent and boasts of more than 2000 cases.

With a vision of giving holistic and continued care for patients with GI & hepato-biliary malignancy, the centre has a fully-fledged oncology department. The centre is a smooth blend of clinical, academic and research activities. Fellowship courses in Minimal Access Surgery & Therapeutic Endoscopy affiliated to Tamil Nadu's Dr. MGR Medical University are available. National and international hands on training called "EASIE Animal Model" recognized by Society of Gastrointestinal Endoscopy of India (SGEI) are also conducted every year.

#### Outcomes:

##### Academic

Pharm. D students and Postgraduates from JSS AHER underwent a clinical internship programme for a period of two months as a part of student study exchange at VGM Hospital, Coimbatore.

The students, who have completed this programme at VGM Hospital, have gained knowledge and experience in clinical pharmacy activities under the mentorship of Dr. VG Mohan Prasad, Chairman, VGM Hospital and Dr. S. Ponnusankar, Professor-Head, Dept. of Pharmacy Practice. Primarily, Pharm. D students and graduates of JSS AHER underwent Internship in Clinical Pharmacy services at GHC, Chennai for a period of two months in Gastro-enterology department at VGM Hospital.

- A total of **10 students** have undertaken the internship.
- During their internship programme, they learn the therapeutic monitoring of diseases and appreciate the management of such diseases by clinicians and pharmacists alike. The students are introduced to Clinical Pharmacy department activities and are briefed about ambulatory patient care. They are posted to Gastro-Enterology department for a period of two months to learn about most common diseases and clinical pharmacy activities. The students actively take part in ward round participation, treatment chart review with the mentors.
- Very few institutions in India have an opportunity to provide clinical rotation in the specialized area of gastroenterology



*Ms. Nina Mathew, Ms. Sandra Robin and Ms. Angela Abraham during the internship at VGM Hospital*

<b>Collaborating Partner</b>	: <b>Apollo BGS Hospital, Mysuru</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 25.04.2018
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Student Internship Training
- Research Collaboration

### Brief Overview of the Collaborating Partner:

Apollo BGS Hospitals, Mysore is an NABH accredited, super-specialty tertiary care hospital located in the heart of Mysore city. Inaugurated in July 2001, today it is one of the largest private hospitals in the region. It is intended to raise India's global standing as a healthcare destination, with emphasis on excellence in clinical services, diagnostic facilities and research activities. We are the only hospital in Mysore to function with a full-time-specialist system that ensures availability of and access to the best medical talent around the-clock.

Treating over 2,00,000 patients annually, the hospital is well equipped with the latest technology and trained staff and doctors who are dedicated to the full spectrum of specialties at the facility where Heart Institutes, of Orthopedics, Institutes of Neurosciences, Institutes of Gastroenterology, Cancer Institute, Transplant Institutes, Emergency 24/7 are the core specialties.

### Outcomes

#### Academic

- 22 students have undergone internships at Apollo BGS Hospital, Mysuru.
- Pharm.D, M.Pharm Pharmacy Practice and Doctor of Philosophy (PhD) students from JSS AHER posted at Apollo BGS Hospital, Mysuru have undergone clinical rotation in the various specialties like cardiology, nephrology, urology, neurology, orthopedics, pediatrics, gastroenterology.
- This rotation has provided the students with an opportunity to get an exposure to understand the different regimens to treat various disease conditions especially in cardiology.
- Expert Cardiologists from Apollo BGS Hospital have shared their experience with both the students and Faculties

#### Research

##### Research Publications

**Total No. of Publications:** 12

**Areas of Research Publication:** Cognitive studies, Biomarkers,

**Cumulative Impact Factor:** Nil

**No. of Citations:** 7

<b>Sl. No.</b>	<b>Title of the Paper</b>	<b>Journal details</b>
1	Diabetic retinopathy risk prediction for diabetics using nearest neighbour approach	Lecture Notes in Electrical Engineering; 2019; 545: 697-705.
2	Biologics: a tectonic shift in the management of rheumatoid arthritis	APIK Journal of Internal Medicine; 2019; 7(2): 103-108.
3	Effect of insulin-like growth factor-1 on diabetic retinopathy in pubertal age patients with type 1 diabetes	Asia pacific Journal of Ophthalmology; 2019: 319-323.
4	Public health concern on occupational hazards among pathologists and microbiologists in Mysuru district, India	International Journal of Community Medicine and Public Health; 2019; 6(2): 768-773.
12	Management of ankylosing spondylitis; present concepts and guidelines	APIK Journal of Internal Medicine; 2020; 8(3): 107-113.

## Objectives of the collaboration agreement:

<b>Collaborating Partner</b>	:	<b>Narayana Health Multispecialty Hospital, Devanur, Mysuru</b>
<b>Type of Agreement</b>	:	MOU
<b>Date of Signing the Agreement</b>	:	04.07.2015
<b>Duration of Agreement</b>	:	20

- Research Collaboration leading to Publications in Impactful Academic Journals
- Student Internship Training to develop and refine skills and gain valuable clinical work experience and explore future career paths

## Brief Overview of the Collaborating Partner:

Narayana Health (NH) - India's fastest growing Multi speciality hospital chain has set up India's first low-cost multispecialty hospital in Mysore. Located in a serene atmosphere, the hospital features 6 operation theatres, a 42 bedded Intensive Care Unit, blood bank, laboratory, pharmacy and the largest dialysis unit in Mysore.

Narayana Multispecialty Hospital, Mysore offers a wide range of services across specialities which include cardiology, cardiac surgery, nephrology, urology, neurology, neurosurgery, endocrinology, orthopaedics, internal medicine, obstetrics, gynaecology, paediatrics, neonatology and gastroenterology to name a few. The surgical specialities are supported by state-of-the-art diagnostic facilities such as 64 slice CT scan, MRI scan, Cath Lab, Endoscopy, Ultrasound, ECG, Echocardiogram, X-ray and Mammography.

NH Mysore, in a one-of-its-kind initiative, provides free shuttle service for its patients from the hospital to Mysore City. It also offers free consultation to Outpatients across all departments. To ensure holistic treatment and aftercare to patients, companion care workshops have been introduced for patient's companion at the Mysore facility

## Outcomes

### Academic

- 25 students have undergone internships at Narayana Health Multispecialty Hospital, Mysuru.
- Pharm.D, M.Pharm Pharmacy Practice and Doctor of Philosophy (PhD) students from JSS AHER posted at Narayana Health Multispecialty Hospital, Mysuru have undergone clinical rotation in the various specialties like cardiology, nephrology, urology, neurology, orthopedics, pediatrics, gastroenterology.
- This rotation has provided the students with an opportunity to get an exposure to understand the different regimens to treat various disease conditions.
- MBA Hospital Administration students are taken for hospital visits and Internships during the semester as part of their curriculum for hands-on training



Hospital visit to Narayana healthcare by Faculty and Students MBA Hospital Administration



### Webinar Organized

- A Webinar was conducted on the topic - Spearheading the Healthcare Administration: Essentials to develop your best talent – on 23<sup>rd</sup> July 2020 wherein Mrs. Nirmala Madappa, Head HR, NH, Mysuru was one of the resource person.

### Research

#### Research Publications

**Total No. of Publications:** 03

**Areas of Research Publication:** Clinical data program

**Cumulative Impact Factor:** 3.96

**No. of Citations:** 4

<b>Collaborating Partner</b>	: <b>JSS College for Women, Saraswathipuram, Mysore</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 03.08.2012
<b>Duration of Agreement</b>	: 5 years
<b>Date of Renewal</b>	: 13.09.2019

### Objectives of the collaboration agreement:

- Collaborative training of PG and Ph.D. research activity.

### Brief Overview of the Collaborating Partner:

The JSS College for Women was established in 1970 in the city of Mysuru is one among the hundreds of fluttering and shining flags of the chariot of Saraswathi. The College has excellent infrastructure facility with well equipped, Spacious, and well-lit classrooms, multimedia facilities and well stacked library. It has been given permanent Affiliation by the University of Mysore in the year 1995-96 and recognized by U.G.C under Section 12B and 2(F). It has been imparting need-based education in the field of Commerce, Humanities and Science. The institution has been reaccredited with A+ Grade by NAAC.

### Outcomes

#### Academic

- Teaching faculties from the collaborating partner are enrolled for pursuing PhD program and undergoing PhD course work
- Laboratory training for teaching faculty as a measure of building research capability

#### Research

✓ Joint research work is summarized as below:

1. Biosynthesis of nanoparticles from medicinal plants for the management of Bacterial speck disease on Tomato. In this study, the overall aim is to understand *Pseudomonas syringae* infectivity in tomato cultivar and combat its activity using synthesised nanoparticle from medicinal extract for the management of bacterial speck.
2. Biogenic Nanoparticle Synthesis of *Allium sativum* for Disease Management of *Pseudomonas syringae* pv. *psidi* on Pea. The study emphasis on screening, isolation and characterization of *Pseudomonas syringae* pv. *psidi* on Pea. Further, design and preparation of nanoparticles with an isolated bioactive compound of *Allium sativum* as a delivery system in disease management of *Pseudomonas syringae* pv. *psidi* on Pea.

## Research Publications

**Total No. of Publications:** 01

**Areas of Research Publication:** Nanotechnology, Microbiology

**Cumulative Impact Factor:** Nil

**No. of Citations:** Nil

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Green Synthesis of BiVO <sub>4</sub> Nanoparticles by Microwave Method using Aegle marmelos Juice as a Fuel: Photocatalytic and Antimicrobial Study	Analytical Chemistry Letters; 2020; 10(3): 298-306	-	-



<b>Collaborating Partner</b>	:	<b>Defence Research Development Organization (DRDO), New Delhi</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	23.11 2011
<b>Duration of Agreement</b>	:	5 Years

### Objectives of the collaboration agreement:

- Collaborative Research in Cognitive Psychology Neurosciences.
- MSc in Cognitive neuroscience.

### Brief Overview of the Collaborating Partner:

The DRDO was established in 1958 by amalgamating the Defence Science Organisation and some of the technical development establishments. A separate Department of Defence Research and Development was formed in 1980 which later on administered DRDO and its 50 laboratories/establishments. Most of the time the Defence Research Development Organisation was treated as if it was a vendor and the Army Headquarters or the Air Headquarters were the customers. Because the Army and the Air Force themselves did not have any design or construction responsibility, they tended to treat the designer or Indian industry at par with their corresponding designer in the world market. If they could get a MiG-21 from the world market, they wanted a MiG-21 from DRDO.

### Outcomes

#### Academic

##### M.Sc. in Cognitive Neurosciences

- Joint curriculum development for a PG program in M.Sc. in Cognitive Neurosciences was carried out
- The uniqueness of the program is to offer first two semester course work at JSS AHER and 3<sup>rd</sup> semester at DRDO

##### Other activities

- 03 Faculty visited DRDO to understand various cutting-edge technologies related to cognitive neuroscience.
- 15 students carried out internships at the Defence Research Development Organization (DRDO) to learn about the methods, techniques and administration of various cognitive neuroscience experience in DRDO laboratory (DIPR, DIPAS and INMAS) and as well offered hands on experience on the applications of neurological tests.
- 02 collaborative workshops conducted in the field of cognitive neuroscience

#### Research

In DRDO, research work is kept highly confidential. However, one of the collaborative research developed 5-fluorouracil (FU) loaded pH and thermo-sensitive nanogels, which are designed for sensing change in tumour environment pH and triggering drug release at physiological temperature. Poly(N-isopropylacrylamide-co-acrylic acid) nanogels loaded with 5-FU displayed effective anti-cancer efficacy when compared to 5-FU alone injection for the same. Results indicate enhanced anti-cancer efficacy and mean life span of the nanogels tumour bearing mice.

## **Research Publications**

**Total No. of Publications:** 01

**Areas of Research Publication:** Nanotechnology, Oncology

**Cumulative Impact Factor:** 0.785

**No. of Citations:** 08

<b>Collaborating Partner</b>	: <b>Institute of Applied Dermatology (IAD), Kasargod</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 26.12.2013
<b>Duration of Agreement</b>	: 7 years

### Objectives of the collaboration agreement:

To jointly carryout the activity of research and development with a view to invent, improve, promote and advance the medicines, methods and equipments of treatments in dermatology.

### Brief Overview of the Collaborating Partner:

The Institute of Applied Dermatology in Kasaragod, Kerala, is today, the world's lead Lymphoedema and integrative medicine hospital and has been mentioned as world's lead lymphology clinic in one of World Health Organisation (WHO) publications. It was started in 1999 as a not-for-profit venture to provide effective treatment for skin diseases. Being sector-specific for skin care treatment, this skin clinic is emerging as first choice of contact for all long-standing skin problems, applying an integrative treatment using holistic approach. IAD focuses on Integrative protocol of disease management in various diseases, like vitiligo, psoriasis, lichen planus, non-healing ulcers, warts and hemiplegia. An integrative approach combining treatments of Modern medicine (Allopathy), Ayurveda, Homeopathy and Yoga has helped IAD to treat lymphedema and other chronic skin diseases. IAD has grown from a small clinic to one of the primary applied dermatology hospitals in the country. Started by a group of eminent Indian medical experts, IAD now collaborates with experts worldwide for better care of difficult – to -treat skin diseases and lymphoedema.

### Outcomes

#### Academic

A two-day interdisciplinary workshop on Achieving In situ Functional Histopathology (AifH 2015 dated March 21 & 22, 2015) was held in the Indian Institute of Technology (IIT) Kharagpur, India. The workshop showcased invited lectures from eminent academicians, clinicians and inventors in the field of medical imaging who are explicitly working on technologies to understand the pathology of tissues in situ. Coordinated by Dr Jyotirmoy Chatterjee and Dr Debdoot Sheet, the workshop provided 30 young researchers with a platform to network and learn from experts in this multi-disciplinary area of translational research in computational and biomedical imaging. Dr S. R. Narahari from the Institute of Applied Dermatology, Kasaragod, Kerala, and Dr B. Vijaya from JSS Medical College, Mysore, Karnataka, jointly spoke on their work in developing ayurvedic (traditional Indian medicine) practices for diagnosing and treating Psoriasis and evaluating its healing efficacy using dermatopathology, immunohistochemistry for integrative medicine.

#### Research

JSS AHER has collaborated with IAD for research in the area of lymphoedema. The outcomes of the collaborative research are:

- Identified that significant part of the massive swelling in lymphoedema is contributed by type III collage as indicated by the upregulation of the gene transcription
- Listed the major skin manifestations of lymphoedematous skin
- Listed the future research priorities for lymphoedema in the world
- Identified rare cancer associated with lymphoedema

## Research Publications

**Total No. of Publications:** 05

**Areas of Research Publication:** Lymphoedema

**Cumulative Impact Factor:** 3.831

**No. of Citations:** 37

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citation
1	Human skin fibrosis: up-regulation of collagen type III gene transcription in the fibrotic skin nodules of lower limb lymphoedema.	Trop Med Int Health. 2020;25:319-327. doi:10.1111/tmi.13359	2.308	12
2	A rare case of primary cutaneous diffuse large B-cell lymphoma, leg type in a patient with chronic lymphedema of the leg	Indian J Pathol Microbiol 2019;62:470-2	-	2

## Outreach

Histopathological analysis: More than 300 biopsies sent from IAD has been analysed and reports given

<b>Collaborating Partner</b>	: <b>National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bangalore</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 14.10.2014
<b>Duration of Agreement</b>	: 10 Years

### Objectives of the collaboration agreement:

- To introduce newer techniques in the development of cost effective & efficient biological & diagnostic aids
- To provide prompt & effective diagnostic services for identification of disease problem with an aim to eradicate them.

### Brief Overview of the Collaborating Partner:

NIVEDI - National Institute of Veterinary Epidemiology and Disease informatics, formerly known as project directorate of animal disease monitoring and surveillance (PD\_ADMAS), has a long successful history of delivering predicted informatics and solutions for various animal diseases. The institute has been setup under the regulations of Indian council of agricultural research (ICAR).

Indian Council of Agricultural Research (ICAR), a Central Government organization under the Department of Agricultural Research and Education, Ministry of Agriculture, Government of India, set up an All India Research Project on Animal Disease Monitoring and Surveillance, (AICRP on ADMAS). aiming towards providing the country with comprehensive animal health information, prevalence of diseases in temporal and spatial relation and forecasting and forewarning of the animal diseases, to help in taking necessary control or preventive measures for the specific diseases affecting livestock and poultry during 1987.

The AICRP on ADMAS was later upgraded to Project Directorate on Animal Disease Monitoring and Surveillance (PD\_ADMAS) on 1st April 2000 (during 9th Plan) and AICRP on ADMAS continued to work with ten collaborating units in tandem. Later, realizing the impact of animal disease monitoring and surveillance on our entire livestock sector and to give a boost on this, the PD\_ADMAS was upgraded during the 12th Plan as National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) from October, 2013.

### Outcomes

#### Research

#### Project on serotyping of Leptospirosis

Project on newer techniques on Diagnosis and serotyping of Leptospirosis has been initiated. By doing the seotyping, we could understand the prevailing serotypes in and around mysore. This required maintenance of live strains of leptospira that is not possible in the routine diagnostic labs. It is done by MAT microscopic agglutination test.

#### Research Publications

**Total No. of Publications: 05**

**Areas of Research Publication:** Nanotechnology, Molecular Characterization

## Cumulative Impact Factor: 2.4

No. of Citations: 06

### Objectives of the collaboration agreement:

To work collaboratively for enhancing the knowledge base and strengthening the Health Care delivery system for assuring cost effective, ethical and rational health care especially to indigenous groups, marginalised and socio-economically vulnerable groups living in Mysuru District.

### Brief Overview of the Collaborating Partner:

Swami Vivekananda Youth Movement (SVYM) is a nonreligious, non-political and not for profit organization registered under Karnataka Societies Registration Act and Ministry of Home Affairs, Government of India under FCRA 1976 with its administrative headquarters in Saragur, Karnataka state, India.

SVYM runs seven institutions and has 50 projects in the area of Health, Education, SEEP (Socio Economic Empowerment Program) and TRAC (Training, Research, Advocacy and Consultancy), spread over 27 districts of Karnataka State. The health activities incorporate institution based care as well as community based programs with equal emphasis on preventive curative and rehabilitative services.

The Key focus area include-

- Tribal and rural health
- Reproductive and child health
- Water, sanitation, Hygiene and Environment
- Care and Control of Tuberculosis
- Disability care
- Comprehensive HIV-AIDS Management
- Chronic care including care for Non Communicable Diseases and Palliative Care
- Ayurveda and Yoga
- Health system strengthening and capacity building

The innovative primary care delivery programs and grassroot initiatives addressing the Health Determinants and health-related behaviors have been accorded appreciated and awards by the Government, WHO and many other agencies.

### Outcomes

#### Academic

#### Student Internships and Postings

**MD students postings:** Regularly every year the Postgraduate (MD) students are being posted to the centre for a period of one month. The objective of the postings are;

- i. Outreach clinics, camps and other outreach activities

ii. Projects in the tribal area

iii. health education activities to the tribal community

***MPH compulsory and elective internships (15 days to 3 months):***

Depending on the project undertaken the MPH students are posted for the internship for a period of 15 days to 3 months.

***MBBS interns 15 days stay postings***

To orient the undergraduates regarding the morbidity pattern and the lifestyle of the tribal community, 15 days stay posting was given for all the interns. They were involved in services given through mobile clinics in the interior of the forest, regular OPD and IPD services at the SVYM hospital.

***Undergraduate students:*** As a part of educational field visit, undergraduate are regularly taken to the SVYM centre with the objective of orienting undergraduates regarding working of a NGO in the tribal area, tribal school, functioning of hospital at the tribal area.

***Palliative care training*** to MBBS and MD student

Till date more than 500 students have undergone postings, internships and training.



**Capacity Building**

The “**Public Health Lecture series**” activity of department of Community Medicine is conducted, where experts from public health field will be invited and will share their experiences of working in various public health cadres and the contribution made by them.

As a part of this activity,

- Dr Dennis and Dr Vibha, working for Swamy Vivekananda Youth Mission, Sargur, were invited here. They delivered the lecture on “**Activities and role of SVYM on public health and Palliative care**”



- Dr Sunitha Singh Programme Manager and Head of Community Health, Swamy Vivekananda Youth Movement, Mysuru, had delivered a lecture on **“Implementation of Reproductive and Child Health Projects in tribal areas: Strategies and Challenges”** on 24th of October 2019. In her deliberation, Dr Sunitha describe the role of Non-Governmental organization in uplifting the health and wellbeing of people in difficult to reach areas. She described the situation of mother and child health in these areas with real life examples and mentioned how these vulnerable groups are uplifted from the difficult situations. She urged the students to take up Community Health as a specialty to bring about the changes in the lives of people.





## Research

### Research Publications

**Total No. of Publications:** 07

**Areas of Research Publication:** Tribal Healthcare, Tuberculosis

**Cumulative Impact Factor:** Nil

**No. of Citations:** 12

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Socio-demographic and Cultural factors influencing Treatment Outcomes Among Patients with Tuberculosis attending Tribal Health Care Centres of H.D Kote Taluq, Mysore.	Indian Journal of Public Health Research & Development; 2019: Vol 10, no.03, 66-71	-	2
2	Determinants of Adolescents Attitude Towards Gender Equality in Urban, Rural, and Tribal Areas of the Southern Part of India	Online J Health Allied Sci. 2020, Vol-19, Issue-2. Page 4-9	-	-

<b>Collaborating Partner</b>	: <b>JSS College of Arts, Commerce &amp; Science, Ooty Road, Mysuru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 24.06.2017
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- Collaborative training of PG and Ph.D. research activity

### Brief Overview of the Collaborating Partner:

JSS College of Arts, Commerce and Science is a co-educational College established in 1964 under the aegis of JSS Mahavidyapeetha, Mysore. The college is situated on a sprawling 7.08 acres plot with a spacious building and a hostel in a picturesque surrounding at the foot of Chamundi Hills.

The College is recognised by UGC under section 2(f) and 12(B) of the UGC Act 1956 and is receiving central assistance. The college has been functioning as an autonomous college from the academic year 2005-06. The distinctive features of autonomy are that the college is empowered to frame the syllabi, introduce new courses and conduct examinations independently. The degree is awarded by the University of Mysore. The College is offering a total of 49 programmes in BSc and BA along with BCom, BCA, BBA, MSc (Physics, Chemistry, Mathematics, Computer Science, Biotechnology, Biochemistry, Botany, Zoology), MCom, MA (English, Kannada), Social Work and PhD. COCs and PG Diploma programmes are also offered.

The college has undergone assessment & accreditation by NAAC with four Star grade in 2001, 'A' grade in 2008 (cycle 2) & 2014 (cycle 3). In 2010, the College was recognized by UGC as 'College with Potential for Excellence' and continued for II phase in 2015. Further, UGC-DDU KAUSHAL Kendra was established with financial assistance from UGC. The KAUSHAL Kendra is offering B.Voc/M.Voc in Food Processing & Engineering, B.Voc/M.Voc in Software Development, Certificate, Diploma and Advanced Diploma courses in Animation & Multimedia under Community College Scheme.

### Outcomes

#### Academic

- Teaching faculties from the collaborating partner enrolled for pursuing PhD program and undergoing PhD course work
- Laboratory training for teaching faculty as a measure of building research capability

#### Research

- Intra-institutional joint research activity initiated, and research work carried out are summarized as below:

#### **1. Facile microwave-assisted green synthesis of ZnO nanoparticles: application to photodegradation, antibacterial and antioxidant**

The study reports the effective synthesis of zinc oxide nanoparticles (ZnO Nps) by microwave irradiation method using Indian bael (Aegle marmelos) juice as fuel. The ZnO nanoparticles were

subjected to antimicrobial activity against different strains. The current synthetic work pledges to provide some new visions into the design of nanomaterial for multifunctional long-term applications for cleanup and biomedical applications.

## **2. Green Synthesis of BiVO<sub>4</sub> Nanoparticles by Microwave Method using Aegle marmelos Juice as a Fuel: Photocatalytic and Antimicrobial Study**

BiVO<sub>4</sub> nanoparticles were synthesised from Aegle marmelos juice, which is a simple, effective, and low-cost microwave irradiation technique. These synthesised nanoparticles have shown the prominent photocatalysts for the degradation of organic pollutants like methylene blue.

## **3. Synthesis, antibacterial, and antioxidant studies of 7-amino-3-(4-fluorobenzoyl)indolizine-1-carboxylate derivatives**

The quaternary salts of 4-aminopyridine, i.e., 4-amino-1-[2-(4-bromophenyl)-2-oxoethyl]pyridin-1-ium bromides were newly synthesized and investigated for antimicrobial, nitric oxide free radical scavenging activity, reducing power scavenging activity, and lipid peroxidation inhibition activity.

### **Research Publications**

Cross-disciplinary collaborative research has driven sustainable niche projects in the area of life sciences, environment sciences and informatics leading to joint scientific publications. The details of the joint publications are provided below;

**Total No. of Publications:** 18

**Areas of Research Publication:** Microbiology, Phytochemistry, synthetic chemistry, nanoparticle

**Cumulative Impact Factor:** 3.43

**No. of Citations:** 23

<b>Sl. No.</b>	<b>Title of the Paper</b>	<b>Journal details</b>	<b>Impact Factor</b>	<b>No. of citations</b>
1.	Preferred parenting style in rural community and its association with socio-demographic variables: a cross sectional study	International Journal of Community Medicine and Public Health; 2019; 6(10): 4263-4266	-	-
2.	Preferred parenting style in rural community and its association with socio-demographic variables: a cross sectional study	International Journal of Community Medicine and Public Health; 2019; 6(10): 4263-4266	-	-
3.	Association between socio-demographic variables and alcohol dependency among alcoholics attending alcohol deaddiction camp held at Gundlupet, Karnataka, India	Indian Journal of Public Health Research and Development; 2019; 10(2): 273-276	-	-
4.	Synthesis, antibacterial, and antioxidant studies of 7-amino-3-(4-	Journal of Applied Pharmaceutical Science; 2020; 10(2): 77-85	0.65	5

	fluorobenzoyl)indolizine-1-carboxylate derivatives			
5.	Green Synthesis of BiVO <sub>4</sub> Nanoparticles by Microwave Method using Aegle marmelos Juice as a Fuel: Photocatalytic and Antimicrobial Study	Analytical Chemistry Letters; 2020; 10(3): 298-306	-	-
6.	Synthesis, Anti-Bacterial And Antioxidant Properties Of Ethyl 7-Amino-3-Benzoyl-2-Methylindolizine-1-Carboxylate Derivatives	AIP Conference Proceedings; 2020; 2274(1).	0.56	-
7.	Comparison of 24 h recall and 3-day dietary cycle with 7-day dietary cycle as a tool for dietary assessment at community level in a rural South Indian community: A cross-sectional study	International Journal of Medical Science and Public Health; 2020; 9(13): 1-5	-	-
8.	Facile microwave-assisted green synthesis of ZnO nanoparticles: application to photodegradation, antibacterial and antioxidant	Journal of Materials Science: Materials in Electronics; 2020; 31(2): 1004-1021	2.22	11
9.	Microwave induced synthesis, and pharmacological properties of novel 1-benzoyl-4-bromopyrrolo[1,2-a]quinoline-3-carboxylate analogues	Chemical Data Collections; 2020; 25: 100316	-	4
10.	Comparison of 24 h recall and 3-day dietary cycle with 7-day dietary cycle as a tool for dietary assessment at community level in a rural South Indian community: A cross-sectional study	International Journal of Medical Science and Public Health; 2020; 9(2): 174-178	-	-

<b>Collaborating Partner</b>	: <b>JSS College of Physiotherapy, Mysuru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 24.06.2017
<b>Duration of Agreement</b>	: 5 years

### **Objectives of the collaboration agreement:**

Academic and Research interaction and collaboration.

### **Brief Overview of the Collaborating Partner:**

JSS college of Physiotherapy was established in the year 1999 with the blessings of the present pontiff His Holiness Jagadguru Sri Shivarathreeshwara Deshikendra Mahaswamiji. The chief goal of the institute is to create competent physiotherapists having contemporary knowledge & innovative skills to promote rehabilitation, health & fitness.

The college was the first in the district of Mysore and adjoining districts of Kodagu, Mandya, Chamarajnar and Hassan in Karnataka and neighbouring areas of Wayanad in Kerala and Nilgiris in Tamil Nadu.

This unique situation has afforded many opportunities for the students at our college. Currently the institution offers undergraduate and post graduate programmes (BPT & MPT) under the aegis of Rajiv Gandhi University of Health Sciences, Bengaluru. The college is recognized under section 2(f) of UGC and by the Indian Association of Physiotherapists

### **Outcomes**

#### **Academic**

- Students Exchange Programme have been initiated and students from La Trobe University paid visit to JSS College of Physiotherapy, Mysuru
- 14 Faculties from JSS College of Physiotherapy, Mysuru have registered for PhD

#### **Research**

##### **Ph.D Program**

07 Faculty Members are pursuing Ph.D at JSS AHER, Mysuru

01 Faculty Member has completed Ph.D at JSS AHER, Mysuru

##### **Research Projects**

Two Research projects have been submitted to ICMR for extramural funding.

##### **Research Publications**

The collaborative publications are enumerated below;

**Total No. of Publications: 11**

**Areas of Research Publication:** Therapeutics, Pulmonology, Community Medicine

**Cumulative Impact Factor:** 1.72

**No. of Citations:** 4

<b>Sl. No.</b>	<b>Title of the Paper</b>	<b>Journal details</b>	<b>Impact Factor</b>	<b>No. of citations</b>
1	Listing of Indian Folk Games for Potential Therapeutic Benefits in Children with Neurodevelopmental Disability	Games for health journal; 2020.	1.72	-
2	Knowledge and beliefs towards universal safety precautions during the coronavirus disease (COVID-19) pandemic among the Indian public: a web-based cross-sectional survey	Drugs and Therapy Perspectives; 2020: 1-8.	-	-

<b>Collaborating Partner</b>	:	<b>JSS Academy of Technical Education, Noida</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	25.06.2018
<b>Duration of Agreement</b>	:	5 years

### Objectives of the collaboration agreement:

- Collaborative training and PG research, Ph.D.

### Brief Overview of the Collaborating Partner:

JSS Academy of Technical Education Noida (JSSATEN) is one of the leading Technical Institutions in the National Capital Region in the State of Uttar Pradesh. Established in the year 1998 by JSS Mahavidyapeetha, Noida, the Institution has set bench marks every year, and grown into an Institution of Excellence in Technical Education. Located in the central part of NOIDA, JSSATEN has become a household name for its excellence in Discipline, Teaching, Training and Placement. Today, JSSATEN has total student strength of over 4000, who are mentored by more than 250 Faculty Members.

The Academy has been awarded top rankings by many agencies including Hindustan Times. The excellent placement opportunities are visible with more than 80 companies visiting the institution for Placement during the year 2014. JSSATEN is an Institution with a difference where emphasis has been laid on the principles of harmonious living, high morals and ethical values besides excelling in technical subjects

### Rankings:

National Institutional Ranking Framework (NIRF) India Rankings 2020: Engineering (Rank-band: 201-250)

### Outcomes

#### Academic

- A seed money grant of Rs. 5.0 Lakhs was provided by JSS AHER to JSSATE, Noida for research activities
- From the seed money provided, 07 projects have been carried out as enumerated below;

SI.No.	Title of the Research Project	Name of the Department
I.	Molecular interactions in binary liquid mixtures of polymers and organic species using FTIR, NMR and thermodynamic study	Physics
II.	Smart Air Pollution Management System	Computer Science and Engineering

III.	Identification of Groundwater Potential Zones and Assessment of Groundwater Quality in Gautam Budh Nagar District, UP by Integrating Remote Sensing and GIS Techniques	Civil Engineering
IV.	Development of Eco-Friendly Based Polymers, for applications of their Blends/Nano-Composites to Improve Performance of the Packaging Technology	Chemistry
V.	Intelligent Home Security and Automatic Appliance Control	Instrumentation and Control Engineering
VI.	Light signal Aid Device for Night Drivers in National highways	Electrical and Electronics Engineering
VII.	To develop a Dynamic Load Controller to Mitigate Flickers Caused by Photovoltaic Systems.	Electrical Engineering



## **Project: I**

### **Title of the Project:**

Molecular interactions in binary liquid mixtures of polymer and organic species using FTIR, NMR and thermodynamic study

### **Principal Investigator:**

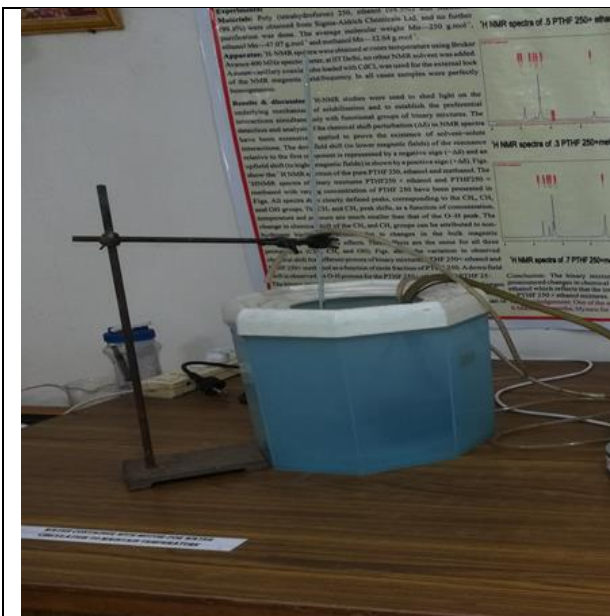
Dr. Kaushlendra Pratap Singh, Assistant Professor, Department of Physics, JSSATE, Noida

### **Academic Impact:**

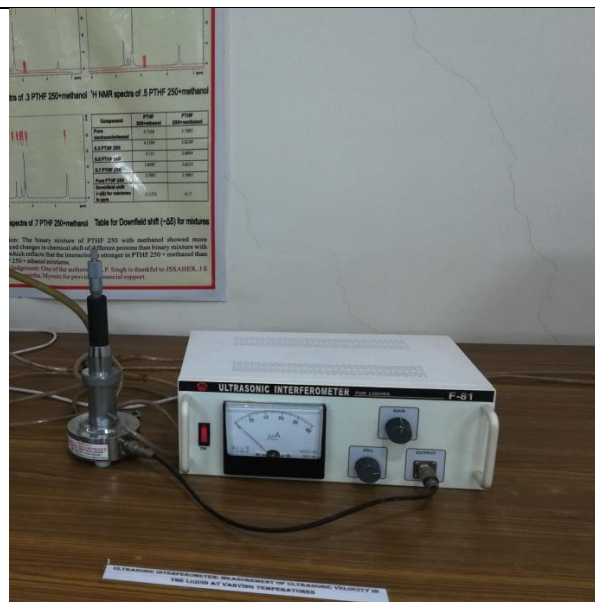
All the objects existing in nature are comprised of molecules, on the basis of which, they can be distinguished from one another. Various forces are responsible for both the formation of molecules as well as for associations amongst them. The study of the nature and strength of these forces have proved helpful in probing the physical world around us. The interpretation of these forces can be done either macroscopically or microscopically. Macroscopic approach gave the idea that matter is treated as a continuum possessing certain properties clearly defined by well - known measuring operations without assuming any knowledge of the internal structure. Therefore, knowing the macroscopic properties, it is possible to determine the law of force among the molecules constituting a substance. On the other hand, the microscopic point of view aimed at the detailed knowledge of the internal structure.

Molecular interaction provides a better understanding of fundamental problems related to the mechanism of chemical and biochemical catalysis and the path of chemical reactions because this is the key to understand the structure and properties of liquids, solids and gases. Therefore, the study of molecular interaction is one of the most fascinating areas of research in condensed matter physics.

Many undergraduate students from the college worked on above field with the research setup and presented papers in conferences of international repute.



**Water circulator to maintain temperature below, room temperature by adding ice/ cold water**



**Ultrasonic interferometer: Used to measure ultrasonic velocity in pure, binary and ternary mixtures at varying temperatures**



**Left to right: 1. Double walled glass jacket to maintain the temperature by putting pycnometer and Ostwald Viscometer for density and viscosity of pure, binary and ternary mixtures at varying temperatures**



**Water Bath: to increase the temperature above to room temperature**



**Sample preparation with the help of electronic balance for different concentration**



**Complete lab setup for measurement of Ultrasonic velocity, density, viscosity and refractive index at varying temperature and concentrations,**

### **Research Impact:**

Thermodynamic properties derived from the measurement of density, ultrasonic velocity and viscosity for binary mixtures are useful in understanding the nature and type of intermolecular interactions between the component molecules. The estimation of different thermodynamic properties is essential for understanding the interactions occurring in components of unlike molecules. In recent years, there have been considerable interests in theoretical and experimental investigation of the excess thermodynamic properties of polymers. The potential impact of ozone layer of chlorofluorinated carbon is extensively used in number of mechanical systems, and also has a subsequent contribution to greenhouse effect resulting in the beginning of new era of the study of absorption heat cycles that is incorporated in various network of thermal recovery systems. Many organic compounds have been introduced as working fluid of absorption machines in order to improve the characteristics of working pairs. The  $\text{NH}_3+\text{H}_2\text{O}$  and  $\text{H}_2\text{O}+\text{LiBr}$  working pairs are well known in refrigeration technology, but these show important disadvantages due to higher temperature levels of heat transformer process.

### **Research Publications:**

1. K. P. Singh, S. Singh, Thermodynamic and acoustic properties of binary mixtures of PEGDME 250 with 1-propanol and 1- butanol at 293, 303 and 313°K, Physics and chemistry of liquids, An international Journal ,57, 658-678(2019) Publisher: Taylor and Francis Impact factor: 1.707, Index: SCI & SCOUPUS\
2. Richa Verma, K.P. Singh, Evaluation of the Kirkwood Buff parameters for a High-Power Tunable Dye Laser Solution, AIP Conf. Proc. 2136, 040013-1–040013-4;  
<https://doi.org/10.1063/1.5120927> Published by AIP Publishing. 978-0-7354-1879

## **Project: II**

### **Title of the Project:**

Smart Air Pollution Management System

### **Principal Investigator:**

Dr. Jyoti Gautam, Associate Professor, Department of CSE, JSSATE NOIDA

### **Academic Impact:**

Students were involved to carry out the research work. Research papers were published and case studies taken to help students learn concepts related to a Smart System for air pollution.

### **Research Impact:**

Attended as an Invited Speaker to share new research findings at the 5th International Conference on Fuzzy Systems and Data Mining (FSDM 2019) (Oct. 18-21, 2019, Kitakyushu International Conference Center, Japan) for the Paper -Air Pollution Concentration Calculation and Prediction. Received invitation from Director, Synchrotron Light Application Center, Saga University, JAPAN. Received excellent presentation certificate from Dr. Chong Ong, Intel, Canada and International Travel Grant from AKTU to attend the conference. Link: <http://www.fsdmconf.Org>

### **Papers Published**

1. Jyoti Gautam, Arushi Gupta, Kavya Gupta and Mahima Tiwari, "Air Pollution Concentration Calculation and Prediction", accepted for publication by ICETEAS 2018. The accepted ones will be published in the conference proceedings by Springer and Indexed by SCI & Scopus. (Chapter in Adv in Intelligent Syst., Computing, Vol. 841, Vijay Singh Rathore et al: EMERGING TRENDS IN EXPERT APPLICATIONS AND SECURITY, 978-981-13-2284-6, 465034\_1\_En. (30))
2. Jyoti Gautam, Nitima Malsa, Vikas Singhal and Komal Agrawal, "Calculating AQI using Secondary Pollutants for Smart Air Management System", accepted for publication by ICDMAI 2019. Conference proceedings by Springer. Link: <https://link.springer.com/chapter/10.1007%2F978-981-13-9364-810>.
3. Paper published with ICCSEMS 2020 with the Title: Selection of the Best Model for Prediction of CO<sub>2</sub> towards Smart Air Pollution Monitoring

## **Project: III**

### **Title of the Project:**

Identification of Groundwater Potential Zones and Assessment of Groundwater Quality in Gautam Budh Nagar District, UP by Integrating Remote Sensing and GIS Techniques.

### **Principal Investigator:**

Mr. Tilak, Assistant Professor, Department of Civil Engineering, JSSATE, Noida

### **Summary of the research proposal:**

The present study utilizes the application of analytical hierarchical process (AHP) on geospatial analysis for the exploration of potential zones of groundwater in the Gautam Buddha district, Uttar Pradesh, India. The morphology of earth surface features such as geology, geomorphology, soil types, land use and land cover, drainage, lineament, and aquifers influence the groundwater in either direct or indirect way. These thematic layers are extracted from Landsat ETM+ image, topographical map, and other collateral data sources. In this study, the multilayers will be weighed accordingly to the magnitude of groundwater potential. The AHP technique is a pair-wise matrix analytical method which will be used to calculate the geometric mean and normalized weight of individual parameters. Further, the normalized weighted layers are mathematically overlaid for preparation of groundwater potential zone map and water quality index will be worked out to assess the spatial variation of groundwater quality.

### **Key words:**

Remote sensing, Geographical information system (GIS), AHP, groundwater

### **Academic Impact:**

During the process students were identified based on their research interest and UG project topic was given and preliminary work was carried out for identification of methods and data collection was done.

As a result, a research methodology was identified and a student thesis was generated which gave a platform to submit a research proposal for Dr. A.P.J AKTU University and got selected for Collaborative Research and Innovation program (CRIP) under AKTU TEQIP III scheme for 3.00 lakh funding.



**Samples Collected and kept in the Laboratory**



**Samples collecting from the source**

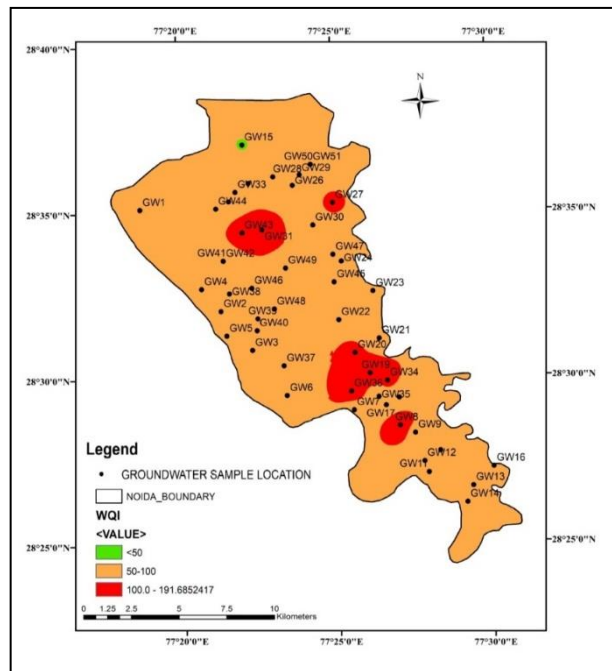


**Testing of Water Samples in the Lab**



**Testing of Water Samples in the Lab**

The GIS based water Quality Index analysis reveals that the 84.4% of collected groundwater samples falls in excellent and good water category and 15.6% groundwater samples falls in poor category. The results revealed that water quality index varies from 47.10 to 192.10. The water quality index less than 50 is considered as excellent water, 50-100 is considered as good water, 100-200 is considered as poor water, 200-300 is considered as very poor water and WQI greater than 300 will be considered as unfit for drinking. The study recommends for some treatment considering for drinking purpose and locals in that area need to treat the water before usage. The GIS based analysis suggests sewage treatment plants, Industries for considering treatment of water before discharging into the water bodies. The study recommends for continuous monitoring of groundwater quality, and implementation of methods and techniques for improving water quality. Further, it is advised to avoid water consumption from bore wells and hand pumps, should be treated to avoid unnecessary health disorders. Predicting and mapping the pH value with the WQI gave us insight of the volatility of WQI on the pH, although “good water” in WQI index is also fit for usage but the pH if it is in limit contributes to the “Excellent water”.



**Spatial Distribution of GIS based WQI**

### **Research Impact:**

Research provided advance and scientific methods of Identification of Groundwater pollutants and Spatial Distribution map were generated sector wise about the chemical pollutants present.

This project was the base work for further inter disciplinary research in college. As a part of this collaborative research Department of Computer Science and Engineering and Department of Civil Engineering came together to solve the prevalent societal water related problem and received a funding of 3 Lakh rupees from AKTU Lucknow under TEQIP III Collaborative research initiative. Dr Kakoli Banerjee was Principal Investigator from Department of Computer Science and Engineering and Mr. Santhosh Kumar M B and Mr. Tilak L N as Co- Principal Investigator from Department of Civil Engineering.

### **Research Publications:**

Two papers have been accepted

1. Title: Delineation of potential groundwater zones using Analytical hierarchy process (AHP) for Gautham Buddha Nagar District, Uttar Pradesh, India

Authors: Dr Kakoli Banerjee, Santhosh Kumar M B, Tilak L N

Accepted Journal: Materials Today: Proceedings, ELSEVIER

2. Analysis of Groundwater quality using GIS Based water quality index in Noida, Gautam Budh Nagar, Uttar Pradesh (U.P), India

Authors: Dr Kakoli Banerjee, Santhosh Kumar M B, Tilak L N, Sarthak Vashistha

Accepted Journal: Springer Nature

The Work will be published in the book series Lecture Notes in Electrical Engineering.

## **Project: IV**

### **Title of the Project:**

Development of Eco-Friendly Based Polymers, for applications of their Blends/Nano-Composites to Improve Performance of the Packaging Technology.

### **Principal Investigator:**

Dr. R.S. Jagadish, Professor, Dept. of Chemistry, JSSATE, Noida

### **Academic Impact:**

The prepared Chitosan-based biofilms could be used in various fields for its biological and physical properties of biocompatibility, biodegradability, antimicrobial and easy film forming instead petroleum-based nonbiodegradable packaging materials. This work comprehensively talks about the preparation and application of engineered chitosan-based films with multiple functionalities in food packaging and biomedical applications

### **Research Impact:**

#### **Modification of chitosan with PEO and effect of glycerol on the functional properties of chitosan/PEO blended films studied.**

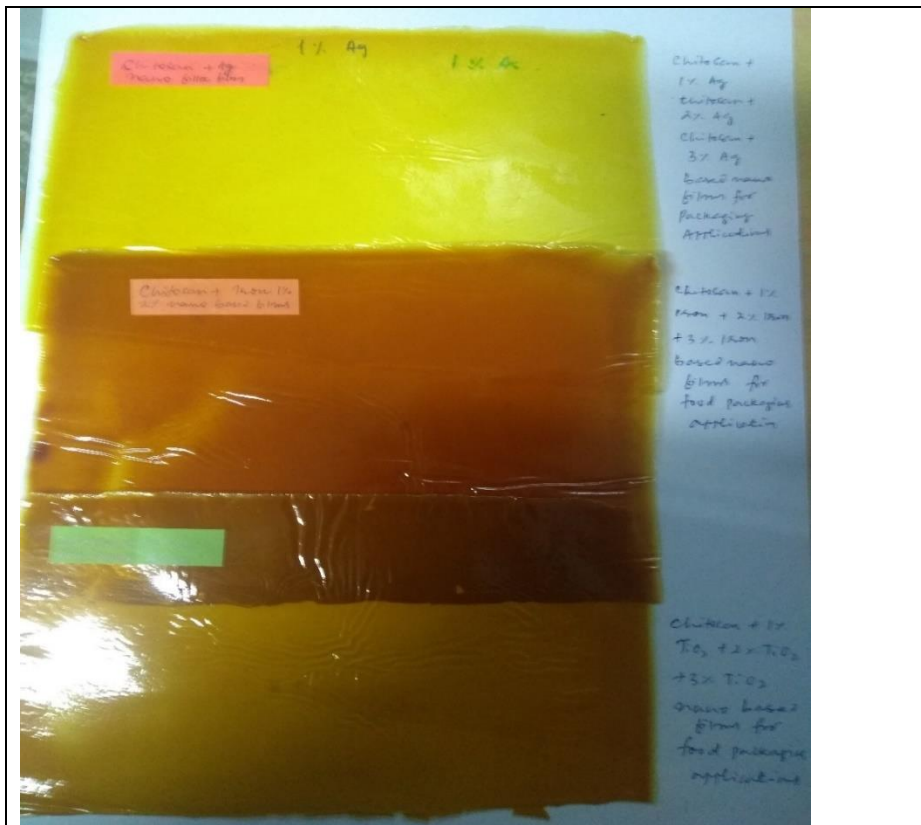
In summary, the chitosan/PEO blended films with and without glycerol showed several interesting characteristics. The tensile strength of the blended films with glycerol decreased by 14% whereas % elongation increased by more than 150% ensuing in flexibilized films. Due to the plasticized effect haze values of blended films with glycerol decreased from 17% for chitosan to 3.7% for pure PEO resulting in increase in transparency of the films. The WVTR of chitosan/PEO blended films with and without glycerol showed a dual trend. For chitosan/PEO 60/40 ratio, it decreased up to 16.22% in chitosan/PEO, 24.18% and 29.85% in 10% and 20% glycerol added chitosan/PEO blended films. And then it increased further in chitosan/PEO blends with and without glycerol. These films with high WVTR values can be used for fresh produce to control moisture evaporation and enhances their shelf life. These films biodegrade/disintegrate within five weeks.

#### **Blending of nano fillers in chitosan - preparation and characterization of films with antimicrobial activity**

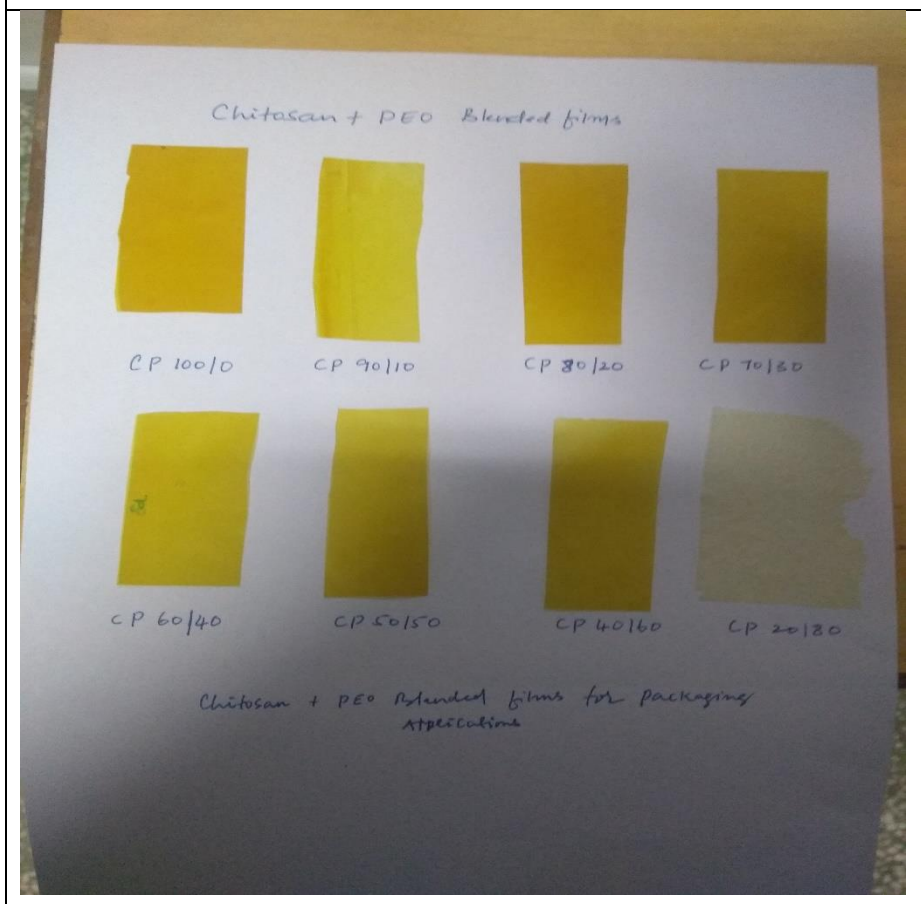
In summary Physico-mechanical and barrier properties of chitosan films were significantly affected through intercalation of NPs in chitosan matrix. Tensile strength increased by 22 – 84 %, whereas, Water Vapor Transmission Rate (WVTR) decreased by 16 - 56 % depending on the nature and amount of NPs under investigated. Maximum improvement in tensile strength of 84 % was observed for 3% Ag incorporated chitosan NC film. The water barrier properties also improved significantly with the maximum extent of 56 % decreased in 3% iron (III) oxide incorporated nano film in comparison with chitosan glycerol-based films. X-ray studies further reveals that 1 % TiO<sub>2</sub>, 3 % Ag, 5 % Ag and 3 % Fe<sub>2</sub>O<sub>3</sub> NPs loaded chitosan NC films (especially with high Q index values) have good tensile as well as flexible (% elongation) properties which are very noteworthy



and essential for packaging industry Chitosan films containing 3 % and 5 % Ag showed a drastic reduction in the production of aflatoxin B1 by 95.4 and 98.9 % respectively. The aflatoxin B2 content was reduced to undetectable levels proving their effective antimicrobial activity.



**Chitosan Nano basedfilms**



**Projects Applied:**

As Principal Investigator

“Development of Eco-friendly Polymer based Bio-active films for Sustainable Packaging and Bio-medical Applications” (PR32428) to DBT for funding-64.8 lacks. (Not sanctioned)

Ecofriendly Polymer based bioactive films for packaging and biomedical applications submitted to DR APJ AKTU under VRPS Scheme for 5 lakhs (Result is awaited)

**Research Publications:**

1. Manisha, R.S. Jagadish and Nandini K.E, Eco-friendly polymers: A potential alternative to synthetic polymers for packaging applications: A literature review Research Journal of Chemistry and Environment Published Vol 24(4), April 2020 E-ISSN No.: 2278 - 4527; PRINT-ISSN No. 0972-0626 Scopus
2. Manisha, R.S. Jagadish, M.D. Akshata, Prema Vishwanath, Siddaramaiah and Baldev Raj , “Preparation of Chitosan based Nanocomposite Films and their Physico - Mechanical, Optical, Thermal and Antimicrobial Properties International Conference on Advanced Materials and Technology (ICMAT-20) ,16th - 18th January 2020, TEQIP-III Initiative SJCE, JSS U S &T, Mysuru
3. Manisha, R.S. Jagadish, Nandini K.E, Ashima Srivastava and Baldev Raj Modification of chitosan with PEO and Effect of glycerol on the functional properties of chitosan/PEO blended films”, 2<sup>nd</sup> International Conference on Recent Trends in Environment and Sustainable Development October 17-19, 2019, VGU, Jaipur

**Publications Communicated**

1. Manisha, R.S. Jagadish and Baldev Raj “Effect of glycerol on the functional properties of chitosan/PEO blended bio-films” communicated to “Journal of Scientific & Industrial Research”
2. Manisha, R.S. Jagadish, M.D. Akshata, Prema Vishwanath, Siddaramaiah and Baldev Raj “Preparation and characterization of chitosan-based nano-composite films and their mechanical, optical, thermal and antimicrobial properties. Communicated to JAPS.
3. R.S. Jagadish, Baldev Raj, P. Parameswara and R. Soma Shekar “Structure property relations in chitosan based nano composite films Communicated to JAPS.

## **Project: V**

### **Title of the Project:**

Intelligent Home Security and Automatic Appliance Control

### **Principal Investigator:**

Dr. Chhaya Dalela, Associate Professor, Department of ECE, JSSATE NOIDA

### **Co-Principal Investigator:**

Mr. Deependra Sharma, Assistant Professor, Department of ECE, JSSATE NOIDA and Mrs. Swati Mishra, Assistant Professor, Department of EEE, JSSATE NOIDA

### **About the project:**

Following are the broad objectives:

1. To create a door unlocking security system that runs using the Arduino microcontroller
2. Consists of a fingerprint sensing module to record fingerprints, a mechanical system to unlock the door, a camera module to take a picture of the intruder and a pressure sensor to detect break-ins.
3. Only when an authorized person places a finger on the sensor, the door unlocks, and the LCD displays a welcome message along with the person's name.
4. As soon as the number of illegal attempts exceeds a pre-decided number, a call is made to the user's phone via an Android application and a picture of the intruder is taken.
5. To continuously monitor the activities in home through CCTV at user Smartphone.
6. With the presence/ absence of resident the power of appliance would be switched on/off.

### **Academic Impact:**

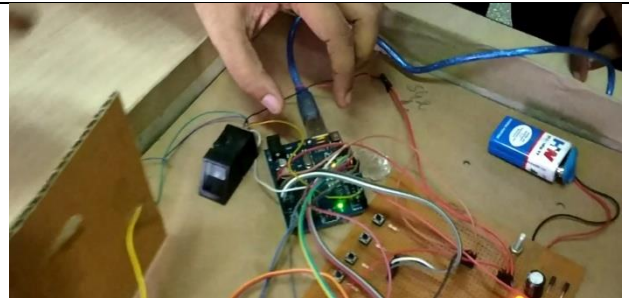
Undergraduate students were involved to carry out the research work. Research papers will be published on the work done in this project. This project helps the students to learn concepts related to Arduino microcontroller.

### **Research Impact:**

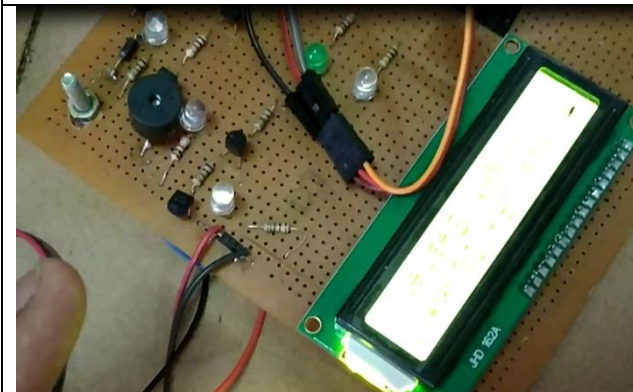
This surveillance cum fingerprint door unlock system using Arduino can be very useful for home surveillance, door security, forensics, crime investigation, personal identification, attendance system and much more. In the future, there could be many more applications like fingerprint-based driving licenses, bank accounts operation and so on.



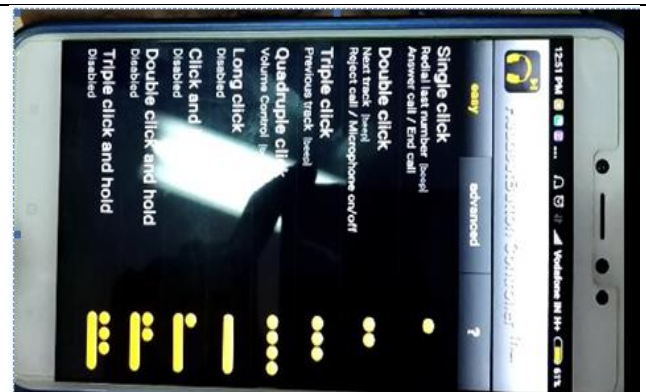
**Students were involved to carry out the research work on door unlocking security system that runs using the Arduino microcontroller**



**Fingerprint sensing module to record fingerprints**



**LCD displays**



**Headset control Mobile application**



**Headset used with relay**



**Door automatically open and closed**

## Project: VI

### **Title of the Project:**

Light signal aid Device for Night drivers in Highways

### **Principal Investigator:**

Ms. Chaitra N Yadahalli, Assistant Professor, Department of EEE, JSSATE NOIDA

### **Co-Principal Investigator:**

Ms. Meghana B N, Assistant Professor, Department of EEE, JSSATE NOIDA

### **About the project:**

In today's busy world, every person is in hurry and is stressed out because of the need to earn more money due to the inflation in every item that are needed for day-to-day life. Most of the times the drivers do day and night shifts without rest. The requirement of urgency of customer while commuting and restlessness of drivers are leading to more accidents in highways, especially at nights as there would-be chances of driver to doze off. And today's era supports type of differently abled persons to work and live with main stream persons. In the light of above-mentioned phase of evolution, we dream a revolutionary vision, where people with complete hearing disability will be supported with a device which will help them while driving by sensing the alerting sounds that may require swift response of the driver. And speakers provided with the device will alert the drivers who are driving at night to avoid the accidents.

The device is highly cost effective and can be easily purchased by common man. The main aim of the project is to save lives of drivers who drive during nights to cope up with necessities of life. And to help persons with complete hearing disability to act at par with normal persons while driving on road. Driver with hearing disability will be able understand different sounds with the help of this tool. The tool will be able to convert sounds of different frequency in to different colored glowing lights. And speaker is also connected to alert the drivers.

This project will bring an Electronic device which is capable of converting sounds of different frequency like ambulance siren, normal honking of cars etc to different color of light. The device will be compact and modular, consuming very less space and hence will not be affecting the interior looks of the car.

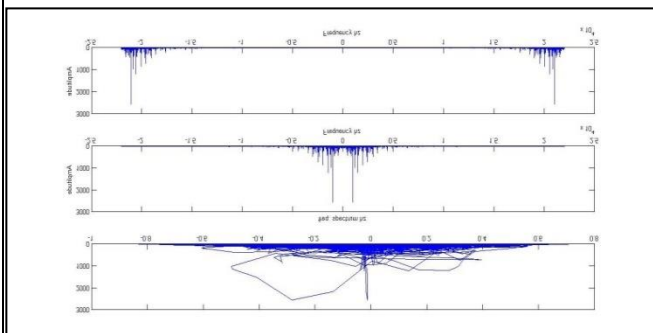
### **Academic Impact:**

Under graduate students were involved to carry out the research work. This project helps the students to learn concepts related to Signal Processing.

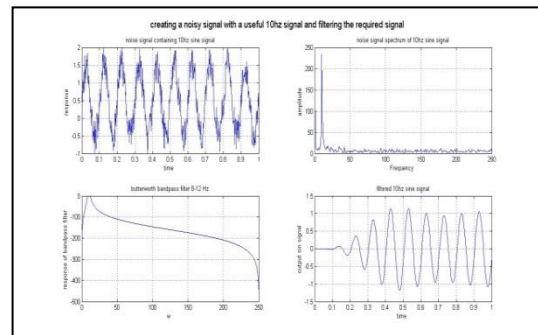
### **Research Impact:**

As per the information availed through internet, in the developed countries there are various devices made by researchers to help drivers in regard to safety measures. Some devices like smart gloves, aria bracelet, babel fisk glasses are being conceptually designed. Whereas vibaring is designed to help the deaf drivers which will give signal to the drive through vibration regarding

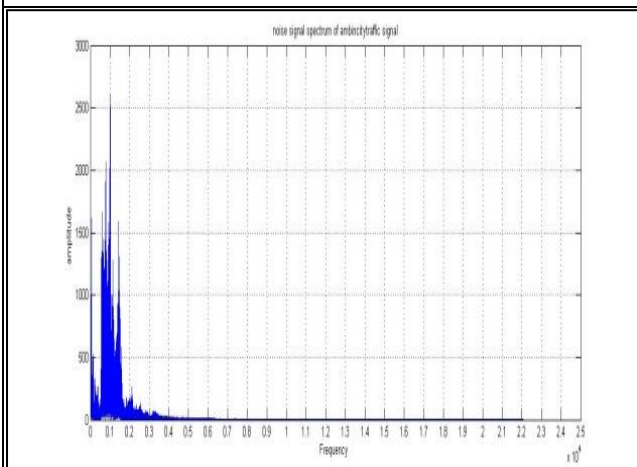
the honking, barking of dogs etc. But such concepts are not be addressed in India at a larger scale. This project can give a way to introduce new devices to help the needy ones especially keeping the India mob in target and also enhance the knowledge of the researcher's area of expertise.



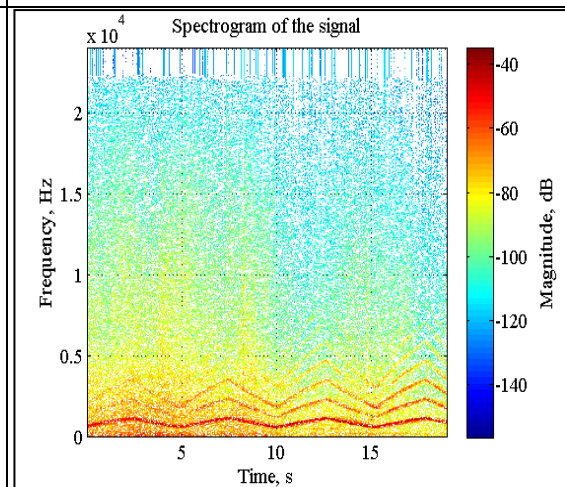
**Hornwaves**



**Noisy sine 10hz signal filtering**



**Ambulance sound in traffic**



**Spectral of the signal**

```

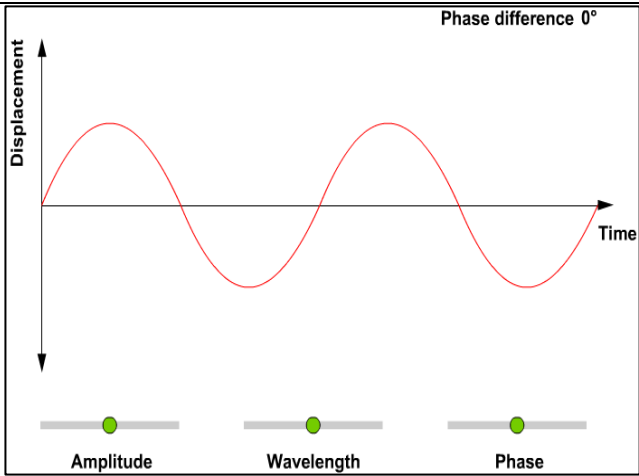
code
    
```

**Code has been written to receive signal from microphone and to print the text about receiving signal on monitor**

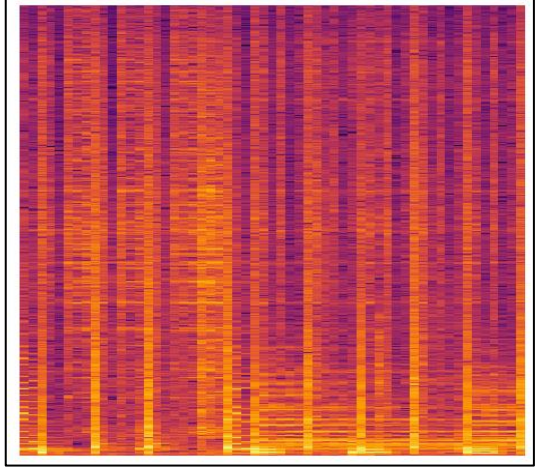
```

code
    
```

**Signal interception acknowledgement**



**Sample signal**



**Sample pictures of spectrogram using CNN model.**

## **Project: VII**

### **Title of the Project:**

GPS Based Solar Tracking System

### **Principal Investigator:**

Dr. Sanjiba Kumar Bisoyi, Associate Professor

Department of Electrical Engineering, JSS Academy of Technical Education, Noida

### **Academic Impact:**

The prototype has been designed and successfully implemented by involving final year student project group in the department. Final year students have taken up this project; the same has been successfully completed by them as part of their final year project thesis.

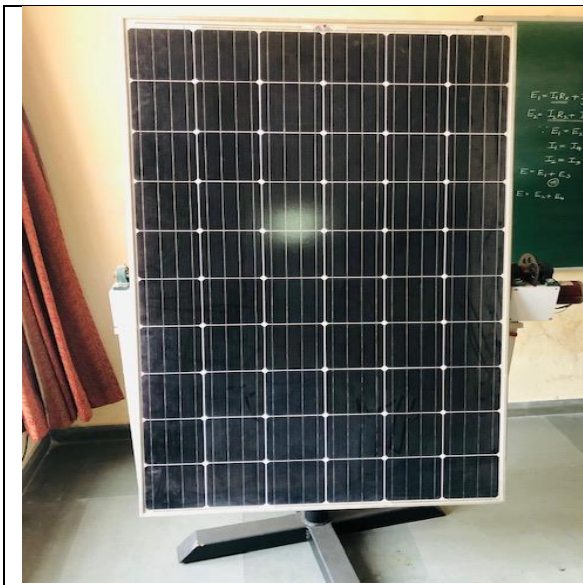
Apart from this the project has been shortlisted in Kalam Annual Project and Poster Technical Competition – 2019 (KAPP Tec) organised by AKTU Lucknow.

Participated in Poster presentation in National Conference on Smart Energy Systems (NCSES2019) at JSSATE, Noida, secured second prize.

### **Research Impact:**

It presents a new design of algorithm for standalone solar tracking system based on ATMEGA Microcontroller. The idea of design is based on astronomical equations to determine the position of sun in the sky at any time of the day to calculate the tilt angle and polar angle for the two axis tracking purposes. The system is capable of tracking the sun properly at any position on the earth because of the general nature of algorithm used in the design. At the same time the system reliability, cost effectiveness, precision and flexibility are taken into consideration. This computer based simple, low cost and efficient technique offer the possibilities of intelligent sun tracking mechanisms for photovoltaic systems. The algorithm containing astronomical equations is being designed and programmed through computer which drives the motor that rotate the panels in precise angles. The proposed design can be used in any part of the world regardless of sun rise and sun set timings. The validity is checked through different model predictions and comparisons and the results are verified. The solar tracking can increase the solar panel efficiency by 30 percent. Moreover, the microcontroller-based tracking system is embedded with a PID controller for which will increase the PV positioning accuracy based from the feedback signal to the absolute encoder.





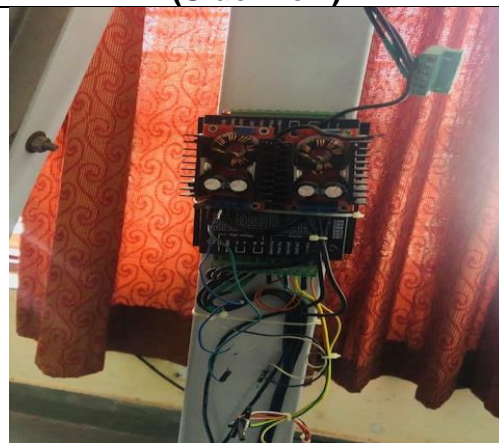
**GPS Based Solar Tracking System (Front View)**



**GPS Based Solar Tracking System (Side View)**



**Mechanical Gear attached to stepper motor**



**AMTEL Microcontroller (Arduino UNO)**



**Stepper motor attached to both ends of the mechanical gear system**

## Projects Submitted to Funding Agencies

02 Collaborative Research Projects have been Submitted to Government Funding Agencies

### Details of Project No. I

<b>Title of Proposed Work:</b>	Machine Learning Analysis of Lung CT Scan Images for Objective Evaluation of Yogic Practices as an adjuvant Treatment for COVID-19
<b>Total Project Cost:</b>	15.63869 Lakhs
<b>Name of the Principal Investigator:</b>	Dr. K.S. Sujatha, Associate Professor, Dean R&D, HoD EEE, JSS Academy of Technical Education Noida
<b>Name of the Co-Investigators:</b>	Dr. Vikram Patil, Assistant Professor- Radiology JSS Medical College, JSS AHER, Dr H G Shivakumar, Professor and Principal, College of Pharmacy, JSSATE, Noida, Dr. Naveen G H, Professor and Principal, JSS Institute of Naturopathy Yogic Sciences, Coimbatore
<b>Funding Agency /Scheme</b>	DST/SATYAM Special Call
<b>Status</b>	Under Processing

### Details of Project No. II

<b>Title of Proposed Work:</b>	Network Pharmacology and Computational Intelligence approach for drug repurposing in COVID-19 infections
<b>Total Project Cost:</b>	Rs.67.32 Lakhs
<b>Name of the Principal Investigator:</b>	Dr Pramod Kumar TM, Principal and Prof, JSS College of Pharmacy Mysuru.
<b>Name of the Co-Investigators:</b>	Dr. Vikram Patil, Assistant Professor- Radiology, JSS Medical College, JSS AHER, Dr. K.S. Sujatha, Associate Professor, Dean R&D, HoD EEE, JSS Academy of Technical Education Noida, Dr. Vineeta Khemchandani, Associate Professor, HoD IT Department: Information Technology, JSS Academy of Technical Education Noida
<b>Funding Agency /Scheme</b>	DST/ HPC Applications" and R&D-Exascale Projects under NSM,
<b>Status</b>	Under Processing

### **Research Publications**

**Total No. of Publications:** 06

**Areas of Research Publication:** Physics, Polymers

**Cumulative Impact Factor:**4.342

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Thermodynamic and acoustic properties of binary mixtures of PEGDME 250 with 1-propanol and 1- butanol at 293, 303 and 313°K,	Physics and chemistry of liquids, An international Journal 57, 658-678(2019) Publisher: Taylor and Francis	1.707	-
2	A potential alternative to synthetic polymers for packaging applications	A literature review Research Journal of Chemistry and Environment Published Vol 24(4), April 2020E-ISSN No.: 2278 – 4527	0.205	-
3	Clump splitting in Histopathological images based on concave points	Proceedings - 2015 International Conference on Cognitive Computing and Information Processing, Ccip 2020	-	-
4	Adaptation of pharmaceutical marketing and drug promotion practices in times of pandemic COVID-19	International journal of health and allied sciences; 2020; 9(5): 11-17	-	-
5	Exploration of Bioactive Components Of Thunbergia Coccinea, Its Pharmacognostic, Antioxidant, GCMS And Antihyperglycemic Studies	International Journal of Pharmacy and Pharmaceutical Sciences; 2020; 12(6): 45-54	2.43	-
6	Blends of synthetic plastic-derived polypeptide with Hydroxypropylmethylcellulose and polyvinyl alcohol: unraveling the specific interaction parameters, morphology and thermal stability of the polymers couple	Journal of Polymer Research;2020; 10(3): 298-306	-	-

<b>Name of the Collaborating Partner</b>	: <b>Farooqia College of Pharmacy, Mysuru</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 29.4.2019
<b>Duration of Agreement</b>	: 5 years

### **Objectives of the collaboration agreement:**

- Collaborative training and PG and Ph.D research.

### **Brief Overview of the Collaborating Partner:**

Farooqia College of Pharmacy, Mysuru started in the year 1998 is a well-established institution started by Rifa- Hul Muslimeen Educational Trust, Mysuru (RMET) which also has a Dental College and other institutions like Women's Polytechnic, Teachers Training and High Schools. The Farooqia College of Pharmacy, Mysuru offers D. Pharm, B. Pharm and Pharm D Courses.

### **Outcomes**

#### **Research**

##### **Ph.D Research Work**

- 06 faculty members from Farooqia College of Pharmacy, Mysuru are pursuing Ph.D research work at JSS AHER, Mysuru. The topics of their research work are listed below;
  - Novel approaches for bone regeneration technique using beta-tricalcium phosphate from coral beach sand
  - Development and evaluation of transdermal microneedle delivery for diabetes mellitus
  - Formulation and development of bioadhesive injectable hydrogel for the treatment of lower backpain
  - Design, synthesis and pharmacological activity of novel N-myristoyl transferase (NMT) inhibitors
  - Design, synthesis and biological evaluation of eugenol and its derivatives
  - Evaluation of memory enhancing property of Erythrina variegata leaves and their phytochemical investigation".

## Research Publications

**Total No. of Publications:** 20

**Areas of Research Publication:** Biopolymers, Formulation, Drug development studies

**Cumulative Impact Factor:** 0.24

**No. of Citations:** 15

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	Formulation and investigation of polymeric multiple unit pellet systems consisting of sustained release glimepiride and immediate release atorvastatin	Asian Journal of Pharmaceutical and Clinical Research; 2019; 12(5): 142-150	-	-

<b>Collaborating Partner</b>	: <b>St. Philomena's College, Mysuru</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 29.4.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Student exchange
- Faculty exchange
- Joint publication
- Joint Research
- Collaborative training and PG research, Ph.D.

### Brief Overview of the Collaborating Partner:

St. Philomena's College (SPC), Mysuru is an autonomous college affiliated to University of Mysore and located Mysuru, Karnataka, India. SPC, is an autonomous college affiliated to University of Mysore. SPC Mysuru was established in the year 1946 and was the first 'Science Degree College' in the city of Mysore. It was the first Degree College in the state of Karnataka to be accredited by NAAC with A+ Grade. The University Grants Commission (UGC) declared the college as a 'College with Potential for Excellence' in the year 2010. The college attained Autonomous Status in 2011 and was reaccredited by NAAC with 'A' Grade with a CGPA of 3.58 in the second cycle. From 01.04.2015 the UGC has recognized the college as 'College of Excellence'. The college has 35 departments at the UG level comprising of BA, Languages, B.Sc, BBA, BCA, Tourism and Hospital Management, B.Voc and Community College. The college has separate PG studies and research center offering 11 PG courses which include Chemistry, Biochemistry, Physics, Mathematics, Computer Science, Economics, English, Holistic Spirituality, Journalism, Social Work and Commerce. As on today, the college has more than 170 faculty members, about 2000 undergraduate and 350 post graduate students. The University of Mysore has given recognition to the departments of Physics, Chemistry, Social Work and Journalism and Mass Communication as research centers.

### Outcomes

#### Research

#### Ph.D Program

One faculty member from St. Philomena's College, Mysuru is pursuing Ph.D at JSS AHER, Mysuru. The title of the research work is - "**Bio-attributes of permuted essential oils: an in vitro and in vivo study**"

#### Project for Funding agency

One project has been submitted to external funding agency. The details are below;

Title of the Project	Bio-attributes of permuted essential oils: an in vitro and in vivo study
Amount	INR 42.11 Lakhs
Agency & Scheme	DST – Women Scientist Scheme
Status	Under Consideration

## Summary of the Project

Obesity, a life-style disorder is increasing the percentage of the affected population and health complications it is bringing amongst the affected individuals. Obese individuals have increased WAT mass which gives rise to other health complications like cardiovascular disorders, diabetes mellitus, stroke, etc. Nuclear receptor proteins called Peroxisome proliferator - activated receptors (PPARs) are distributed on brown and white fat cells regulating their functions being transcription factors. PPARG regulates fatty acid storage and glucose metabolism in adipose tissues. Activated genes of PPARG stimulate lipid uptake and adipogenesis by fat cells. PPARG activates PRDM16 and along with factors like FOXc2, PGC1 alpha, C/EBP induces transformation of WAT into BAT like beige/brite adipocytes which resembles BAT in their function. Many natural agonists are believed to bring about similar actions. EOs being minor components exhibit different biological activities such as antioxidant, antimicrobial, antiviral, antiinflammatory, antihyperlipidemic and anticancer activities. EOs being volatile, and water insoluble can be made available with sustained release using nanoencapsulation protocols of Alginate, chitosan, Polycaprolactone, Poly(lactic-co-glycolic acid) in conjugation with minerals like selenium and calcium which have antiheperlipidemic properties as therapeutic agents against obesity. The scope of work would include but would not be limited to design and synthesize permutes of EOs, their structural analysis, toxicity analysis, comparative analysis of body mass of permuted EOs untreated and treated ob/ob mouse models, secondary assays including anti-hyperlipidemic efficacy both in vivo and invitro by finding the expression levels of PPARgamma, PRDM16, FOXc2, PGC1alpha, C/EBP and permuted EOs role in conversion of WAT to BAT which can possibly be a potent therapeutic agent in treating obesity.

## Research Publications

**Total No. of Publications:** 02

**Areas of Research Publication:** Anti-oxidant activity

Sl. No.	Title of the Paper	Journal details
1	In-vitro Free Radical Scavenging Activity of Loranthus Elasticus Desv.	Journal of Harmonized Research In Pharmacy; 2020; 1(1): 12-18.
2	Spectrophotometric determination of peroxidase using N, N-diethyl-p-phenylenediamine sulphate and 3-Aminophenol as a chromogenic reagent: Application of the method to seeds of some fruits	Chemical Data Collections; 2021; 43416; 84-95

<b>Collaborating Partner</b>	: <b>JSS College of Nursing, Mysuru</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 19.12.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- To participate in organizing seminars, training courses, workshops and programmes jointly and independently in the fields of common interest.
- To exchange scholars and expert faculties for sharing experience and knowledge.
- To facilitate exchange of visits by trainers and trainees.
- To exchange and access academic publication materials, information, data, and other research works related to common interest.
- To share infrastructure and other facilities required for academic and research purposes.
- To promote interdisciplinary learning

### Brief Overview of the Collaborating Partner:

JSS College of Nursing, Mysuru, located in Ramanuja Road, Mysuru – 570004 is an institution under JSS Mahavidyapeetha, Mysuru and is affiliated to Rajiv Gandhi University of Health Sciences, Bangalore, and recognized by Indian Nursing Council. The JSS College of Nursing was started in 1997. Programs offered are Bachelor of Nursing (Basic and Post Basic) and M.Sc in Nursing course.

The MOU was signed in 2019 with a purpose to establish an enduring framework for educational relationship and co-operation between the two participating institutions in order to promote academic learning, training, and research and also explore the possibility of joint academic programmes

### Outcomes:

#### Research

#### Funded Research Projects

- 09 Funded collaborative research projects have materialized and are enumerated below;

SI.No.	Title of the project	Grants Sanctioned (INR)	Status of Project
1	Comparative study on foetal doppler	3,50,000/-	Completed
2	Development of intrapartum solution	4,60,000/-	Completed
3	Study to compare the effectiveness of Video assisted teaching V/s Planned Demonstration Programme on Breast self-examination among school teachers of Mysuru city.	60,000/-	Completed
4	Impact of versatile intervention programme on osteoporosis risk among working and non-working women: Serum vitamin D and Calcium Nutrition.	1,60,000/-	Completed
5	Sexual abuse, coping strategies and psychiatric morbidity among Nursing students in selected nursing institution in	50,000/-	Completed



	Southern Karnataka.		
6	Effectiveness of Nutrition education package in improving dietary adequacy of children, growth of children (3 – 5 years) and knowledge of mothers of children regarding recommended nutrition among children in selected rural areas of Mysuru Dist.	1,50,000/-	In Progress
7	<b>Dynamic Workflow Orchestration:</b> Decision making process and point sin management of acute MI and stroke attending emergency medicine department in tertiary care hospital in collaboration JSS University, <i>Philips</i> India Limited	13,40,000/-	Completed
8	A study to assess the effectiveness of SHE smart health education on awareness of cervical cancer among final year B.Sc students and staff nurses in selected hospital Mysuru	20,000/-	In progress
9	Effectiveness of planned Demonstration Programme with video assisted teaching on knowledge and competency in selected first aid measures among high school students of Mysuru city.	8,29,500/-	In progress
	Total	<b>34,19,500</b>	

## Research Publications

The details of the collaborative publications are enumerated below;

**Total No. of Publications:** 23

**Areas of Research Publication:** Child health Nursing, Medical Surgical Nursing, Midwifery and Mental Health Nursing

**Cumulative Impact Factor:** 11.211

**No. of Citations:** 8

Sl. No.	Title of the article	Name of the journal, Volume, Issue, Period	Impact Factor	No. of Citations
1	A study to assess the effectiveness of structured programme on knowledge regarding hazards of plastic usages among house wife in selected community area, bengaluru	International Journal of Advance Nursing Management, Vol. 07, Issue-03, July-Sept:2019	-	-
2	Effectiveness of structure teaching programme on knowledge regarding cervical cancer and its prevention among primary school teachers in selected schools at mysuru city	World Journal of Advanced Health Care Research, Vol.- , Issue-,Jan 2020	-	-
3	A study to assess the poly cystic ovarian syndrome risk status and to evaluate the effectiveness of an awareness programme on knowledge regarding pcos and its management among adolescent girls in selected college at mysuru	Journal of Emerging Technologies and Innovative Research, Vol.06, Issue 06, June 2019	-	-
4	Insight and perceived barriers of women on cervical cancer.	Clinical and Experimental Pathology Research, Vol.02, Issue 02, Oct 2020,	1.57	-
5	Insight and perceived barriers of women on breast cancer	International Journal of Immunological Nursing, Vol.05, Issue 02, Oct-Dec 2020.	4.857	-

<b>Collaborating Partner</b>	:	<b>Mission Spine Foundation, Pune</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	10.01.2020
<b>Duration of Agreement</b>	:	5 years

### **Objectives of the collaboration agreement:**

The proposal for collaboration with MSF is majorly to offer a six-month program known as “JSS AHER-MSF Certificate Program in Endoscopic Spine Surgery”. The MOU would be beneficial in offering a unique certificate program in Endoscopic Spine Surgery

### **Brief Overview of the Collaborating Partner:**

Mission Spine Foundation (MSF) is a company registered under the Companies Act, 1956 having its registered office at 1128 Shivajinagar, 8 Kamla Regency, Gopal Krishna Gokhale Road, Shivajinagar, Pune – 411 016. MSF is engaged in the field of Spine Surgery in India for over 20 years and is carrying on teaching activities with special focus on Transforaminal Endoscopic Spine Surgery. MSF is headed by its founder and Chairman Dr Satishchandra Gore. MSF is the one of the leading organization which promotes endospine surgery in India and also world over.

### **Outcomes**

#### **Academic**

The program has been initiated and one student has enrolled for the program.

<b>Collaborating Partner</b>	: <b>Defence Food Research Laboratory, (DFRL) Mysuru</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 31.10.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- To facilitate ethical clearance in conducting human/clinical trials of food products.
- To identify other areas of possible interest and collaboration.
- To identify opportunities for exchange of faculty and research staff.

### Brief Overview of the Collaborating Partner:

The Defence Food Research Laboratory (DFRL) is an Indian defence laboratory of the Defence Research and Development Organisation (DRDO). Located in Mysore, Karnataka, it conducts research and development of technologies and products in the area of food science and technology to cater the varied food challenges for the Indian Armed Forces. DFRL is organised under the Life Sciences Directorate of DRDO. The present director of DFRL is Dr. A D Semwal.

JSS AHER entered into a formal agreement with DFRL in 2019 with the objective of supporting Pre clinical / clinical studies in the development of food products.

### Outcomes

- The Ethical clearance has been provided by Institutional Animal Ethics Committee (IAEC), JSS AHER for testing of food products and the study is under progress.
- Human ethical clearance was sanctioned to conduct “Evaluation of sea sickness efficacy of food products on sea” on 14.10.2020.
  - Principal Investigator: Dr. T. Anand, Scientist “F”, DFRL, Mysore
  - Co-Principal Investigator: Dr. R.N.Suresh, Prof. of Pharmacology, JSS Medical College, Mysore
- The above study would be conducted between May- July 2021 as per the guidelines of Indian Navy. This period is ideal condition during the monsoon season as the sea sickness is naturally induced in soldiers.

<b>Collaborating Partner</b>	:	<b>St. Peter's Institute of Pharmaceutical Sciences, Warangal, Andhra Pradesh</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	18-03-2020
<b>Duration of Agreement</b>	:	5 Years

#### **Objectives of the collaboration agreement:**

- Co-operation on new or existing academic programmes;
- The development of joint research activities;
- Staff exchange or mutual visits to both institutions;
- Postgraduate student training and development;
- Student exchange;
- The exchange of information in the form of publications and journals, reference materials and other results of teaching and research

#### **Brief Overview of the Collaborating Partner:**

St. Peter's Institute of Pharmaceutical Sciences, Warangal Urban, Telangana was established in the year 1995. St. Peter's is one of the early pharmacy colleges in combined states of Andhra Pradesh and Telangana. The Institute has been operational for twenty-five years, serving educational field of Pharmaceutical Sciences and offering Doctor of Pharmacy (Pharm D), Bachelor of Pharmacy (B. Pharm) and Master of Pharmacy (M. Pharm) programs.

The campus is equipped with good infrastructure, modern labs with latest equipments, Wi-fi connectivity, qualified, renowned resident and guest lecturers, fully equipped library, drug information center, student support services, sports and recreational facilities.

#### **Outcomes**

- Faculty visit has materialized and planning is underway for clinical rotation of Pharm.D students.

<b>Collaborating Partner</b>	:	<b>Consortium of Accredited Healthcare Organizations (CAHO), New Delhi</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	06.06.2020
<b>Duration of Agreement</b>	:	3 years

### **Objectives of the collaboration agreement:**

Conduct certification programs in Quality and Accreditation for the students of JSS AHER

### **Brief Overview of the Collaborating Partner:**

The Consortium of Accredited Healthcare Organisations (CAHO) is having its registered office at M-1 Lajpat Nagar III, New Delhi -110024 and Secretariat at G-100 Sector- 44, Noida-201303. CAHO is a not-for-profit society that was formed with the primary objective of promoting collaboration among accredited hospitals and laboratories to initiate efforts to improve healthcare quality and patient safety to work closely with National Accreditation Board for Hospitals & Healthcare Providers (NABH) and stands for National Accreditation Board For Testing And Calibration Laboratories (NABL).

### **Outcomes**

- CAHO is a national level agency conducting training programmes in Quality in healthcare and their association would involve experts in the field and benefit the department and JSSAHER in terms of quality students and training students in the emerging trends in healthcare
- The hands-on workshop will be conducted in 2021 as it could not be done in 2020 due to COVID-19 situation and lockdown
- Initiation of Certificate Program in Quality & Accreditation (CPQA) Target Audience-MBA Healthcare, PGDM-Healthcare, Nursing, Dental Surgeon Students

<b>Collaborating Partner</b>	:	<b>SPB Physiotherapy College, Surat</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	03.11.2019
<b>Duration of Agreement</b>	:	5 years

### **Objectives of the collaboration agreement:**

- The JSS AHER, Mysuru shall assist the SPB Physiotherapy College (SPB PC), Surat in the disciplines related to medical and health sciences and collaborate in research work without prejudice to its own work.
- The faculty of the SPB PC, Surat on their individual merits and in accordance with the University rules and regulations shall be recognized as co-supervisors/guides where required.
- The JSS AHER, Mysuru shall extend the facilities available with its constituent colleges (Laboratories, Library, etc) for conducting research work.
- The college will agree for such terms and conditions including financial obligations as may be mentioned by JSS AHER from time to time for said collaboration.

### **Brief Overview of the Collaborating Partner:**

SPB Physiotherapy College, Surat was established in 2005 and is affiliated to Veer Narmad South Gujarat University. It is accredited by NAAC-Graded with B+ and Recognized by Indian Association of Physiotherapists (IAP). The College offers Bachelor of Physiotherapy (BPT) and Master of Physiotherapy (MPT) programs. It has a total campus area of 1,72,803 square meters. Out of this, Physiotherapy College has area of 32,638 square feet and Hostel has area of 23,681 square feet.

### **Outcomes**

Activities for Ph.D and interdisciplinary learning are planned from April 2021

### **Future Plans**

- JSSAHER and SPB Physiotherapy college Surat will work collaboratively in the area of Medical and Health Sciences
- This Research Collaboration will be leading to Publications in Impactful Academic Journals

<b>Name of the Collaborating Partner</b>	: <b>JSS Institute of Naturopathy &amp; Yogic Sciences, Coimbatore</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 26.12.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Student Exchange
- Faculty Exchange
- Joint Publication
- Joint Research
- Collaborative programs
- Interdisciplinary teaching

### Brief Overview of the Collaborating Partner:

JSS Institute of Naturopathy and Yogic Sciences [JSS INYS], is the first and largest BNYS college of Tamil Nadu and second largest of India. It is located in 55 acres serene, wooded and meadow campus at Coimbatore, the Manchester of South India. The JSSINYS is a premiere Institute founded in September 1997 by Jagadguru Sri Shivarathreeshwara Mahavidyapeetha [JSSMVP]. The college is affiliated to The Tamilnadu Dr. MGR Medical University, Chennai with an annual intake of 100 and is approved by Central Council for Research in Yoga and Naturopathy [CCRYN] and National Institute of Naturopathy [NIN], under Dept. of AYUSH, Ministry of Health & Family Welfare, Government of India. The college offers 5 ½ yrs Bachelor of Naturopathy & Yogic Sciences [BNYS]. The college and hospital is recognized for research, education and clinical care in Naturopathy and Yoga of world class standard.

### Outcomes

01 Collaborative Research Projects has been Submitted to Funding Agencies. The details are provided below;

<b>Title of Proposed Work:</b>	Machine Learning Analysis of Lung CT Scan Images for Objective Evaluation of Yogic Practices as an adjuvant Treatment for COVID-19
<b>Total Project Cost:</b>	15.63869 Lakhs
<b>Name of the Principal Investigator:</b>	Dr. K.S. Sujatha, Associate Professor, Dean R&D, HoD EEE, JSS Academy of Technical Education Noida
<b>Name of the Co-Investigators:</b>	Dr. Vikram Patil, Assistant Professor - Radiology JSS Medical College, JSS AHER, Dr H G Shivakumar, Professor and Principal, College of Pharmacy, JSSATE, Noida, Dr. Naveen G H, Professor and Principal, <b>JSS Institute of Naturopathy Yogic Sciences, Coimbatore</b>



<b>Funding /Scheme</b>	<b>Agency</b>	DST/SATYAM Special Call
<b>Status</b>		Under Processing

### Future Plans

- Conduct of Interdisciplinary classes
- Collaborative Interdisciplinary research
- Integration of different systems of medicine

<b>Collaborating Partner</b>	: <b>NMIMS University, Mumbai</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 09.04.2013
<b>Duration of Agreement</b>	: Unlimited

### Objectives of the collaboration agreement:

To conduct Joint program in pharmacy and management

### Brief Overview of the Collaborating Partner:

NMIMS is a Deemed to be University located in Mumbai. The University also has campuses at Shirpur, Bangalore, Hyderabad, Indore and Navi Mumbai. It has 17 constituent schools that offer both undergraduate and postgraduate courses in management, engineering, commerce, pharmacy, architecture, economics, mathematical sciences, hospitality, science, law, aviation, liberal arts, performing arts, architecture & design. It has been accredited by NAAC with 3.59 CGPA and Grade A+. NMIMS was also awarded Category I University status by MHRD. NMIMS was established in 1981, by Shri Vile Parle Kelavani Mandal with the help of a donation from Narsee Monjee Educational Trust, as a Management Institute affiliated to University of Mumbai. It became a deemed university established under Section 3 of the UGC Act, 1956 by notification of UGC in 2003.

### Outcomes

#### Academic

- The MBA Program in Pharmacy Administration has been initiated at JSS AHER from the academic year 2018 with the guidance and support from NMIMS.
- A visit of JSS AHER officials to NMIMS, Shirpur campus and Mumbai campus was undertaken to study the infrastructure and facilities.
- MBA Pharmacy Administration Program was started in the year 2018 which is the first of its kind in Karnataka
- 30 Students have enrolled for the MBA Pharmacy Administration Program



Dr. TM Pramod Kumar, Principal, JSS College of Pharmacy, Mysuru and Dr. H.K. Mamatha, Coordinator, DHSMS on visit to NMIMS, Mumbai

### Research

#### Research Publications

**Total No. of Publications:** 02

**Areas of Research Publication:** Clinical pharmacy, Pulmonology

**Cumulative Impact Factor:** 2.57

**No. of Citations:** 10

<b>Collaborating Partner</b>	:	<b>Gujrat Forensic Sciences University, Gujarat</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	06.12.2010
<b>Duration of Agreement</b>	:	Unlimited

### Objectives of the collaboration agreement:

- Research collaboration with exchange of faculty and students leading to collaborative learning and professional development.
- To undertake joint research projects leading to scientific publications and enrichment of knowledge.
- To conduct conferences and workshops for knowledge sharing and life-long learning.
- To develop career-oriented programs that opens many jobs both in educational and forensic areas.
- To organise cultural programs giving an opportunity to understand one another to work together for impactful change.

### Brief Overview of the Collaborating Partner:

Gujarat Forensic Sciences University (GFSU) now National Forensic Sciences University (NFSU) is the world's first and only University dedicated to Forensic and allied Sciences. It was established by the Government of Gujarat through an act passed by the Gujarat Legislative Assembly dated 30<sup>th</sup> September 2008 with an objective of fulfilling the acute shortage against increasing demand of forensic experts in the country and around the world. Evidently, the University became functional from July 2009 onwards with various courses, scientific programs, and training modules being offered. The University was recognized by the University Grants Commission (UGC) as a State University under section 22 of UGC Act, 1956 to award degrees in May 2011. It is in the green and clean city of Gandhinagar which is the capital city of Gujarat state, a vibrant, industrious, safe, and business friendly state of Indian sub-continent.

The University runs in parallel association with the Directorate of Forensic Science (DFS)-Gujarat State, to provide hands-on training pertaining to various areas of forensic science, forensic psychology and research and development. DFS Gujarat is a state-of-the-art, NABL accredited, ISO-IEC 17025:2005 certified laboratory, maintaining international standards in terms of infrastructural facilities, experts, and technology for Forensic analysis.

### Outcomes

#### Academic

#### Development of M.Sc. Program in Forensic Odontology

The M.Sc. program in Forensic Odontology was started at JSS Dental College and Hospital with guidance and support from GFSU. The course offers learning about the examination, handling, and presentation of dental evidence for the legal system. The learners will develop knowledge, experience, and skills in forensic dentistry, and in aspects of forensic medicine, law, and research.

#### Faculty Exchange

08 Faculty have undergone faculty exchange program at GFSU. This has strengthened the Forensic odontology program and equipped our faculty members in developing expertise in forensic sciences in dentistry.

## Symposium/Conferences Organized

**International Symposium & CME on “Forensic Science Services”** was held on 23<sup>rd</sup>, 24<sup>th</sup> & 25<sup>th</sup> September 2011 at JSS AHER, Mysuru. International experts from 08 countries participated in the event which supported the international recognition for JSS AHER, Mysuru.

**13<sup>th</sup> National Conference of Indian Association of Forensic Odontology** was organized by JSS AHER, Mysuru from 19<sup>th</sup> – 20<sup>th</sup> September 2015. The theme of the conference was “Practice of Forensic Odontology” and was aimed at imparting knowledge to general practitioners, undergraduate & post graduate students as well as faculty from various dental colleges. A pre-conference workshop on “Crime scene investigation” was conducted on 18<sup>th</sup> September 2015. The conference was attended by 540 delegates from all over the country. Apart from the guest lectures, there were 240 paper presentations from the registered delegates and 130 e posters presentations.



## Professional Development & Capacity Building

### Guest Lectures

A guest lecture was organized on 2nd January-2019 on the topic “Forensic Odontology”. Dr. Murtaza Ansari, DMD, Orangeburg, USA was the speaker and the chief guest. He spoke about the introduction to Forensic odontology and its applications in day-to-day life and briefed about pre preparedness for man disaster. He also suggested our faculty and students to take up a project on M3C and kit which is linked up to mobile application to collect the dead body data, which in turn used by police for further investigation.

### **International Webinar on Covid-19 recommendations for Dental Autopsy:**



The

Department of Forensic Odontology, JSS Dental College and Hospital, JSSAHER, organized a webinar on the topic “Dental Autopsy recommendations during COVID-19. Are we ready for the best practice in Human Identification and Virtual Dental Autopsy?” by renowned Italian Forensic Odontologist, Prof. Emilio Nuzzolese, Researcher and Professor of Legal Medicine and the Head of the Human Identification Laboratory, University of Turin, Italy. He is a member of the Interpol Forensic Odontology Sub-working group since 2010 and the President of Association of Forensic Odontology for Human Rights.

<b>Collaborating Partner</b>	: <b>Yenepoya, Mangaluru</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 29.04.2019
<b>Duration of Agreement</b>	: 5 Years

### Objectives of the collaboration agreement:

- To undertake collaborative research projects.
- Development of joint academic programs.
- To offer student exchange and faculty exchange.
- To have scientific academic and research publications.
- Collaborative training for postgraduate and Ph.D. research.

### Brief Overview of the Collaborating Partner:

Yenepoya, is a deemed to be university started in the year 2008. It is the first private Deemed to be University in the District of Dakshin Kannada (South Canara). It provides education and research in the field of health sciences including Medicine, Dentistry, Ayurveda, Nursing, Physiotherapy and allied health and basic sciences.

### Rankings:

- Ranked 86<sup>th</sup> among the top 100 universities in the country as per the NIRF Rankings 2020
- Ranked in the band of 301 to 400 in “Times Higher Education” (THE) global Impact rankings 2020

### Outcomes

#### Professional Development & Capacity Building

The faculty members from both the institutions are interacting on the various avenues to support professional learning and undertake action research.

### Research

#### Research Projects

One research project is submitted for extramural funding.

The details are as below;

Title: Efficacy of nano hydroxyapatite in periodontal regeneration

Agency: DST-SERB

Specific area: Nanoscience and nanotechnology application in biology.

Project duration: 2 years and 11 months.

Project total cost (Rs): 264000.00

Project Summary: Periodontal membrane therapy is very challenging to achieve optimum result. There are many osteogenic, osteo-inductive and osteoconductive materials used. One such material is hydroxyapatite. It has found to be an important tool in achieving regeneration. Chitosan is a deacrylated polysaccharide from chitin, naturally found in shells of marine crustaceans and fungi cell walls. Chitosan mainly used as a scaffolding material to deliver the known material. Hence it is

proposed to incorporate into chitosan and deliver to the bone defects to achieve periodontal regeneration.

### Research Publications

Both the institutions have collaborated collectively since the inception of JSS AHER in 2008. Many research papers in diversified areas are published prior and after formalizing the collaboration.

**Total No. of Publications:** 16

**Areas of Research Publication:** Novel activity, Autonomic Modulation, Psychiatry, Cytology, VATM

**Cumulative Impact Factor:** 65.37

**No. of Citations:** 233

Sl. No.	Title of the Paper	Journal details	Impact Factor	No. of citations
1	A comparative study of dexmedetomidine and fentanyl premedication for indirect assessment of neuroendocrine stress response during laparoscopic cholecystectomy	International Journal of Scientific Research. 2019; 8(2): 45-47	-	-
2	COVID-19 pandemic highlights the need to reconsider psychiatry training of Indian medical graduate	International Journal of Health and Allied Sciences; 2020. 9(1): 104-106	-	-
3	Emotional well-being, mental health awareness, and prevention of suicide: Covid-19 pandemic and digital psychiatry	Archives of Medicine and Health Sciences. 2020; 8(1): 147-153	-	-

<b>Name of the Collaborating Partner</b>	: <b>Raksha Shakti University, Ahmedabad, Gujarat</b>
<b>Type of Agreement</b>	: MOU
<b>Date of Signing the Agreement</b>	: 27.6.2019
<b>Duration of Agreement</b>	: 5 years

### Objectives of the collaboration agreement:

- Student and Faculty exchange
- Joint Publication
- Collaborative programs
- Student internship

### Brief Overview of the Collaborating Partner:

Rashtriya Raksha University, formerly Raksha Shakti University (RSU) is a model security educational university located in Gandhinagar, Gujarat, India. It is the first internal security institute of India, established by the Government of Gujarat, India in 2009. RSU was established in 2009 at Gandhinagar by Govt. of Gujarat with the aim to create trained and educated human resource in the field of internal security alongside bringing about innovations in security management through Research & Development. In 2020, it was taken over by central government of India from Gujarat Government.

The university offers under-graduate, post-graduate, research degree programmes, and professional diploma and certificate programmes. Raksha Shakti University is a leading institution in various academic and research programs for studies on internal security.

The university was upgraded as Rashtriya Raksha University, a National University, as an Institute of National Importance through RRU Bill 2020 presented in Lok Sabha.

### Outcomes

- Team from JSS AHER, Mysuru visited Raksha Shakti University, Ahmedabad, Gujarat to initiate the collaboration and obtain guidance for the B.Sc in Forensic Sciences Program
  - JSS AHER has **Started B.Sc Forensic Sciences Program** from 2019 with the support of RSU
  - Discussions are ongoing for supporting internship of B.Sc Forensic Sciences Students at RSU
- The **04** collaborating partners under **Category C** are;

### International - 02

Sl. No.	Name of Institution / Organization
1.	The University of Charleston, USA
2.	University of Valparaiso, Chile

### National - 02

Sl. No.	Name of the Industry
1.	Alveus Pharmaceuticals Pvt. Ltd, Hyderabad
2.	Green Chem, Bangalore

<b>Collaborating Partner</b>	:	<b>University of Valparaiso, Chile</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	11.03.2017
<b>Duration of Agreement</b>	:	10 Years

### **Objectives of the collaboration agreement:**

- To implement activities designed to jointly develop academic, scientific and cultural programs, in compliance with their respective objectives and institutional purposes.
- Strengthening of institutional relations.
- Collaboration between their faculty and administrators.
- Implementation of actions and development of programs for the training and improvement.
- Student and faculty mobility.
- The development of scientific research, innovation and technology transfer.

### **Brief Overview of the Collaborating Partner:**

The University of Valparaíso (UV) is a state public university in Chile, with its headquarters and the majority of its campuses in the city of Valparaíso. It has several other campuses in the Valparaiso Region of Chile (Quinta Región) and in Santiago, which is 100 km from Valparaiso. It offers undergraduate and postgraduate programs in Health and Social Sciences.

### **Rankings:**

- Ranked 1001+ by Times Higher Education World university rankings 2021

### **Outcomes:**

No appreciable outcomes have materialized till date.



<b>Collaborating Partner</b>	:	<b>The University of Charleston, USA</b>
<b>Type of Agreement</b>	:	MoU
<b>Date of Signing the Agreement</b>	:	15.07.2015
<b>Duration of Agreement</b>	:	10 Years

#### **Objectives of the collaboration agreement:**

- Faculty exchanges: designed to diversify the experiential knowledge of faculty who teach courses at the University of Charleston and JSS University.
- Student exchanges: designed to enrich and intensify the undergraduate, graduate, or professional doctoral degree learning environment.

#### **Brief Overview of the Collaborating Partner:**

The University of Charleston (UC) is a private university with its main campus in Charleston, West Virginia, USA. The university also has a location in Beckley, West Virginia, known as UC-Beckley. There are over twenty undergraduate major programs at UC, with two majors being somewhat unusual to the region, with few other colleges offering similar programs: Interior Design and Radiologic Science. Besides these two programs, other top majors at UC include English, Sports Administration, Education, Communications, Accounting, Nursing, and Athletic Training.

#### **Rankings:**

- Ranked 432<sup>nd</sup> by Times Higher Education US College Rankings 2018

#### **Outcomes:**

No appreciable outcomes have materialized till date.

<b>Collaborating Partner</b>	<b>: Alveus Pharmaceuticals Pvt. Ltd, Hyderabad</b>
<b>Type of Agreement</b>	<b>: MoU</b>
<b>Date of Signing the Agreement</b>	<b>: 10.04.2015</b>
<b>Duration of Agreement</b>	<b>: 10 years</b>

#### **Objectives of the collaboration agreement:**

- To facilitate collaborative research and development in the areas of New drug discovery (Medicinal, Organic, Computational Chemistry, and Screening biology) for PhD scholars and M.Pharm students
- To initiate formulation and development for new products
- To promote non-clinical studies and industry academia interaction for teaching and research between partnering industry-institution.

#### **Brief Overview of the Collaborating Partner:**

Alveus pharmaceuticals is a Hyderabad based Indian Contract Research organisation that offers custom synthesis services, specialised in custom synthesis of reference, novel small molecule compounds for pharmaceutical companies and its businesses. Alveus is expertise in early stage drug discovery, Organic, Medicinal and computational chemistry disciplines. They provide services for in the areas of hit identification, lead identification and lead optimization, structure based drug design, focussed library synthesis. Alveus team has years of experience in the field of heterocyclic/organic/medicinal and computational chemistry areas and expertise in in-silico structure and fragment-based design methods to provide and support the client requested services.

#### **Outcomes:**

##### **Research Impact**

Dr. Hariprasad Vankayalapati, Chief scientific Officer and Mr. Y.V. Krishna Reddy, Director-Chemistry Operations were in consultations with the partnering institution- JSS College of Pharmacy, Ooty for research projects taken up by PhD scholars and M.Pharm students. Faculty exchange programs, 100% sponsorship by Alveus Pharmaceuticals to PhD scholars & M.Pharm students, Collaboration and joint research were initiated during this period. One PhD registration of the Staff was proposed from the Industry. However, as on date, no further progress were materialised from the Industry side. In future, we hope to take up opportunities to collaborate with them if it arises.

<b>Collaborating Partner</b>	: <b>Green Chem, Bangalore</b>
<b>Type of Agreement</b>	: MoU
<b>Date of Signing the Agreement</b>	: 29.03.2014
<b>Duration of Agreement</b>	: <b>10</b> years

### Objectives of the collaboration agreement:

- To execute joint research with a focus on standardisation and formulation development of Phytopharmaceuticals in this Industry and Institution collaboration.

### Brief Overview of the Collaborating Partner:

Green Chem is a FSSAI certified herbal extracts producer and supplier located in Bangalore, Karnataka, India. It is a R & D and formulations firm that innovates in herbal formulations and supplies bulk natural product ingredients across the world. Driven by research and a desire to commercialize efficacious natural product ingredients, Green Chem implemented an innovation-driven culture, which complemented by high-end research laboratories dedicated to herbal science, has resulted in 18+ worldwide patents. With an outlook to commercialization, Green Chem established industry leading quality practices in cultivation, manufacturing and packaging of bulk standardized herbal extracts. With a wealth of Pharmaceutical experience, Green Chem upholds the Pharmaceutical-grade processes & methodologies, which have resulted in various accolades at the national and international level. They have successfully driven initiative to backward integrate by acquiring over 100 acres of farmland to cultivate herbs of consistent quality and ensure continuous supply and traceability.

Green Chem has rapidly establishing itself as a leading supplier of over 160 natural ingredients to the international market including India, USA, UK, Australia, Germany, France, Austria, Italy, Norway, Brazil, Mexico and Asia Pacific and works closely with clients to develop, commercialize and market custom formulations.

### Outcomes:

#### Research Impact

Mr. Krishna Rajendran, Director-New business development and Mrs. Kamala Rajendran, Director-Patents and Technical were in consultations with the partnering institutions- JSS College of Pharmacy, Ooty and JSS College of Pharmacy, Mysuru for research projects. Mr. V.C. Venkatesan was coordinating this research attempt with the faculty team of Dept. of Pharmacognosy and phytopharmacy. However, as on date, no further activities were materialised from the Industry side. In future, we hope to take up opportunities to collaborate with them if it arises.

**JSSAHER Participated in pharmacovigilance and Materiovigilance data collection and submitted to National agency (PvPi)**

## 22. PUBLICATIONS OF JSSAHER RELATED TO SDG17

1. Gurmandeep Kaur, Sachin Kumar Singh, Rajesh Kumar, Bimlesh Kumar, Yogita Kumari, Monica Gulati, Narendra Kumar Pandey, K. Gowthamarajan, Dipanjoy Ghosh, A. Clarisse, Sheetu Wadhwa, Meenu Mehta, Saurabh Satija, Kamal Dua, Harish Dureja, Saurabh Gupta, Pankaj Kumar Singh, Bhupinder Kapoor, Nitin Chitranshi, Ankit Kumar, Omji Porwal, Development of modified apple polysaccharide capped silver nanoparticles loaded with mesalamine for effective treatment of ulcerative colitis, *Journal of Drug Delivery Science and Technology*. 2020; 60: 1-10. (IF 2.734) (University of Technology Sydney, Australia)
2. Rubiya Khursheed, Sachin Kumar Singh, Sheetu Wadhwa, Monica Gulati, Bhupinder Kapoor, Ankit Awasthi, Arya Kr, Rajan Kumar, Faheem Hyder Pottoo, Vijay Kumar, Harish Dureja, Krishnan Anand, Dinesh Kumar Chellappan, Kamal Dua, K. Gowthamarajan, Opening eyes to therapeutic perspectives of bioactive polyphenols and their nanoformulations against diabetic neuropathy and related complications, *Expert Opinion on Drug Delivery*, 2020. DOI: 10.1080/17425247.2021.1846517 (IF 4.84) (International Medical University, Bukit Jalil, Kuala Lumpur, Malaysia, Punjab)
3. Aleksandra Zielińska, Filipa Carreiró, Ana M. Oliveira, Andreia Neves, Bárbara Pires, D. Nagasamy Venkatesh, Alessandra Durazzo, Massimo Lucarini, Piotr Eder, Amélia M. Silva, Antonello Santini, Eliana B. Souto, Polymeric Nanoparticles: Production, Characterization, Toxicology and Ecotoxicology, *Molecules*, 2020;25:1-14. (IF:3.267) (Institute of Human Genetics, Polish Academy of Sciences)
4. D. Nagasamy Venkatesh, SN Meyyanathan, R Shanmugam, SS Kamatham, JR Campos, J. Dias Ferreira, EB Souto, Physicochemical, Pharmacokinetic and Pharmacodynamic characterization of isradipine tablets for controlled release, *Pharmaceutical Development and Research*, 2021: 26(1), 92-100 (IF:2.16) (University of Minho, Portugal)
5. Santhosh SB, Mohamed Sheik Tharik A, Susitra Manjari M, Balakrishnan R, Muruganandam N, Chandrasekar MJ. Coronavirus disease–COVID-19: new perceptives towards epidemic to pandemic. *Journal of drug targeting*. 2020 Sep 13;28(7-8):755-9. [IF: 3.380] (Department of Applied Life Sciences and Integrated Biosciences, Graduate School, Konkuk University, Chungju, Korea)
6. Semi Anthelme Nene-Bi, Ramachandran Vadivelan, Ouga Stanislas Zahoui, Palanisamy Dhanabal, Flavein Traore. Influence of sex on food Intake and Body weight in Wister Rats in a Repeated Administration of *Bridelia Ferruginea* Benth Aqueous Extract. *Research Journal of Pharmacognosy*. 2020; 7(4): 83 -91. (Laboratory of Animal Physiology, UFR Biosciences, Felix Houphouët-Boigny University, Abidjan, Ivory Coast.
7. Kaur J, Mishra V, Singh SK, Gulati M, Kapoor B, Chellappan DK, Gupta G, Dureja H, Anand K, Dua K, Khatik GL. Harnessing amphiphilic polymeric micelles for diagnostic and therapeutic applications: Breakthroughs and bottlenecks, *Journal of Controlled Release*, 2021;334:64-95 (IF 9.776) (University of Technology Sydney, Australia)
8. Ramaswamy S, Gowthamarajan K, Priyanka Dwarampudi L, Bhaskaran M, Kadiyala M. Analytical method development, validation and forced degradation studies for rutin, quercetin, curcumin, and piperine by RP-UFLC method, *Drug Development and Industrial Pharmacy*, 2021 Apr 3;47(4):562-8 (IF 3.225) (Texas Southern University, Houston, TX, USA)
9. Khursheed R, Singh SK, Gulati M, Wadhwa S, Kapoor B, Pandey NK, Chellappan DK, Gupta G, Jha NK, Dua K, Kapoor DN. Exploring role of polysaccharides present in *Ganoderma lucidum* extract powder and probiotics as solid carriers in development of liquisolid formulation loaded with quercetin: A novel study, *International journal of biological macromolecules*, 2021;183:1630-9 (IF 6.953) (International Medical University, Malaysia)
10. Karthika C, Hari B, Mano V, Radhakrishnan A, Janani SK, Akter R, Kaushik D, Rahman MH. Curcumin as a great contributor for the treatment and mitigation of colorectal cancer, *Experimental Gerontology*, 2021;152:111438 (IF 4.032) (Yonsei University Wonju College of Medicine, South Korea)

11. Rajan L, Radhakrishnan A, Selleppan G, Mohankumar SK. Susceptible genetic polymorphisms and their association with adverse effects of orlistat therapy, *Obesity Medicine*, 2021;25:100360 (Faculty of Medicine, Health and Life Sciences, Swansea University, United Kingdom)
12. M.K. Abdulkhakimov, I.T. Garipov, R.A. Khaydarov, R.R. Khaydarov, O.U. Gapurova, I.I. Sadikov, T.K. Praveen, S.Y. Evgrafova, novel ion exchange fibers for wastewater treatment from heavy metal ions improvement of equipment and technologies DOI: 10.34828/UdsU.2021.81.56.002, 2021. (Institute of Nuclear Physics, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan)
13. Arjunan Karuppaiah , Dinesh Babu , Divakar Selvaraj , Tamilselvan Natrajan , Ravikumar Rajan , Mrinmoy Gautam , Hariprasad Ranganathan , Karthik Siram , Jerry Nesamony , Veinramuthu Sankar, Building and Behavior of A pH-Stimuli Responsive Chitosan Nanoparticles Loaded with Folic Acid Conjugated Gemcitabine Silver Colloids In MDA-MB-453 Metastatic Breast Cancer Cell Line and Pharmacokinetics In Rats, *European Journal of Pharmaceutical Sciences*, 2021;10(07) 105938. (IF 4.83) (University of Alberta, Edmonton, Alberta, Canada)
14. Chigurupati S, Palanimuthu VR, Kanagaraj S, Sundaravadivelu S, Varadharajula VR. Green synthesis and in silico characterization of 4-hydroxy-3-methoxybenzaldehyde Schiff bases for insulysin inhibition – a potential lead for type 2 diabetes mellitus. *J Appl Pharm Sci* 2021; 11(07):063-071. (Qassim University, Saudi Arabia)
15. Banini BA, Kumar DP\*, Cazanave S, Min HK, Seneshaw MS, Mirshahi F, Santhekadur PK, Wang L, Guan HP, Oseini A, Xie J, Zou H, Alonso C, Bedossa P, Koduru S, Sanyal AJ. Acceleration of Murine Steatohepatitis by Expression of Human PNPLA3 Reveals a Pleiotropic Pathogenic Signature of PNPLA3-associated Steatohepatitis. *Hepatology*, 2020. (International)
16. Praveen Kumar, Chinnappa Apattira Uthaiah, Santhosha Sangapurada Mahantheshappa , Nayak Devappa Satyanarayan, SubbaRao Venkata Madhunapantula, orcid, Hulikal Shivashankara Santhosh Kumar, Rajeshwara Achur. Antiproliferative potential, quantitative structure-activity relationship, cheminformatic and molecular docking analysis of quinoline and benzofuran derivatives. *European Journal of Chemistry* 2020. Vol 11. (International)
17. Kadiyala P, Smitha MC, Narayana Murthy MR. Determinants of Adolescents Attitude Towards Gender Equality in Urban, Rural, and Tribal Areas of the Southern Part of India. *Online J Health Allied Scs.* 2020;19(2):4-9 (International)
18. Smitha M.C, Krishna M, Krupp K, *Purnima Madhivanan*, Size at birth and cognitive function among rural adolescents: a life course epidemiology study protocol of the Kisalaya cohort in Mysuru, South India *BMJ Paediatrics Open* 2020 (International)
19. Sunil Kumar Shambu Nagaraj Desai , Nikhil Sundaresh , M. Suresh Babu , B. Madhu , Oliver Joel Gona. Research Brief- Study of correlation between epicardial fat thickness and severity of coronary artery disease *Indian Heart Journal*, 2020, Volume 72 pp 445-447 (National)
20. Dr.Mahesh PA Impact of Different Instructional Interventions In Training On Inhaler Amongst Asthma and COPD Patients. *International journal of research in pharmaceutical sciences*2020, 11 Issue 2. (International)
21. Dr.Mahesh PA. An Appraisal of Allergic Disorders In India and An Urgent Call for Action *World Allergy Organization Journal* (2020) (International)
22. Dr.Mahesh PA Pediatric Allergic Diseases In The Indian Subcontinent—Epidemiology, Risk Factors And Current Challenges, *The Indian Journal Of Pediatrics*10 June 2020
23. Dr.Mahesh PA. Mapping Child Growth Failure Across Low- And Middle-Income Countries Local Burden Of Disease Child *The Indian Journal Of Pediatrics* Vol 577 | 9 January 2020 Vol 7.

24. Dr.Mahesh PA Comparative Study Of Food Allergies In Children From China, India, And Russia: The Europrevall-INCO Surveys The Journal Of Allergy And Clinical Immunology. Volume 8, Issue 4, April 2020
25. Mapping Local Patterns Of Childhood Overweight And Wasting In Low- And Middle-IncomeCountries Between 2000 And 2017, Nature Medicine, Volume 26, Pages750–759(2020)
26. Dr.Mahesh PA, Effect of Tooth Brushing And Chlorhexidine (0.12%) Mouthwash In Hospitalized Acute Exacerbation (Ae) Chronic Obstructive Pulmonary Disease (Copd) Subjects Referred From Rural Community Centres. International Journal Of Scientific Research Dental Science, Issue-2 | February-2020
27. Rahim Gholipoorfeshkekeh, Dr Narayanappa D. Nuclear Co-repressor 1: A Potential Candidate Gene in the Manifestation of Congenital Heart Diseases International Journal of Human Genetics, 20(2): 55-65, 2020 / 19 100613 / 6.089
28. Channanayaka Chandrasheka, Reshmi Pilla, Prajwala Hassan Vasudev, Tirin bab and George Mathew Panachiyil, Advances in Genetics, Journal of Nepal Paediatric Society, May -Aug-2020.
29. NAGARAJ FESAI, OLIVER JOEL GONA, Dr Vinay Kumar K, Dr Sunil Kumar S, Dr Madhu B, Impact of Updated 2016 ASE/EACVI VISÀ-VIS 2009 ASE Recommendation on the Prevalence of Diastolic Dysfunction and LV Filling Pressures in Patients with Preserved Ejection Fraction, 2021, Journal of Cardiovascular Imaging, Vol.29, Issue.1, P-1-13, ISSN: 2586-7210 (INTERNATIONAL).
30. Dr.PA Mahesh, Health Effects Caused By Air Pollution-From Rnaseq To Populations, Sept.2020, American Thoracic Society 2020 International Conference, Vol.201, (INTERNATIONAL).
31. Judith Marin, Sergi Pascual, Francesco Ameti, Ewoudtvan de Garde, Dr Mahesh P A, Dr Jayaraj B S, Aspiration Risk Factors, Microbiology, and Empiric Antibiotics for Patients Hospitalized With Community-Acquired Pneumonia, 2021, Chest, Vol.159, Issue.1, P-58-72, ISSN: 0012-3692 (INTERNATIONAL).
32. Dr Mahesh P A, Mapping subnational HIV mortality in six Latin American countries with incomplete vital registration systems, 2021, BMC Medicine, Vol.19, Issue.4, P-1-25, ISSN: 1741-7015 (INTERNATIONAL).
33. Rony Abraham Jacob, Priya Srambical Abraham, Dr Ravi M D, Vytila Navya, Feba Rachel Thomas, Mrs Juny Sebastian, Parthasarathi Gurumurthy, Impact of indirect education on knowledge and perception on cervical cancer and its prevention among the parents of adolescent girls: an interventional school-based study, 2021, Therapeutic Advances in Vaccines and Immunotherapy, Vol.9, ISSN: 2515-1355 (INTERNATIONAL).
34. Siva G Somasundaram, Chang Weilong, Cristian Muresanu, Ekaterina V Kochurova, Li Jiajing, Narasimha M Beeraka, Marco Avila-Rodríguez, Complex Treatment and Prosthetic Rehabilitation of an Acquired Maxillofacial Defect with Tumor Invasion: Case Report, 2021, Current Pharmaceutical Design, ISSN: 1381-6128 (INTERNATIONAL).
35. Marisin Pecchio, Debanjan Banerjee, Muralidhar L Hegde, Velmarini Vasquez, Rao Ks Jagannatha, Dr Sathyanarayana Rao T S, Biopsychosocial intersections of social/affective touch and psychiatry: Implications of 'touch hunger' during COVID-19, 2021, International Journal of Social Psychiatry, ISSN: 0020-7640 .
36. Leyla B Chabieva, Narasimha M Beeraka, Gjumrakch Aliev, Sergey A Mikhalev, Andrey P Milovanov, Olga I Patsap, Ozal Beylerli, Liudmila M Mikhaleva, Antonina A Solomatina, Natalya A Gracheva, Lyudmila V Chigray, Tatyana N Khovanskaya, Histomorphological and Functional Features of the Eutopic Endometrium in Patients

- with Ovarian Endometriosis After Surgery—a Clinical Study, 2021, *Reproductive Sciences*, P-1-9, ISSN: 1933-7191 (INTERNATIONAL).
37. Dr Jayanthi M K, Thirunavukkarasu Velusamy, B S Sushmitha, Srinivasan Ramamurthy, Abhinav Raj Ghosh, M Walid Qoronfleh, Saravanan Bhojaraj, T Durai Ananda Kumar, Musthafa Mohamed Essa, Thiyagarajan Ramesh, Dr Saravana Babu Chidambaram, *Biosimilars: An Update*, 2021, *International Journal of Nutrition, Pharmacology, Neurological Diseases*, Vol.11, Issue.1, P-7-16, ISSN: 2231-0738 (NATIONAL).
  38. Siva G Somasundaram, Cecil E Kirkland, Elizaveta V Mikhaylenko, Sergey V Dindyaev, Narasimha M Beeraka, Denis V Kasatkin, Gjumrakch Aliev, *The Role of Neurogenic Bioamines in Nerve Fibers of Uterus during the Postpartum Involution in Experimental Animal Models*, 2021, *Current Pharmaceutical Design*, ISSN: 1381-6128
  39. Zonunsiami Leihang, Dr Basavana Gowdappa H, Dr Mahesh P A, Dr Thippeswamy T, Dr Prashant M Vishwanath, Rangappa S Kanchugarakoppal, Dr Subba Rao M V S S T, Dr Prathima C, Venugopal R Bovilla, Baburajeev C Pookunoth, *Design, Synthesis, Characterization, and Crystal Structure Studies of Nrf2 Modulators for Inhibiting Cancer Cell Growth In Vitro and In Vivo*, 2021, *ACS Omega*, ISSN: 2470-1343 (INTERNATIONAL)
  40. G V Venkataraman, Gregory Wellenius, Dr Mahesh P A, Michelle L Bell, Amruta Nori-Sarma, Dr Rajesh Kumar Thimmulappa, Jesse D Berman, Joshua L Warren, Steve Duane Whittaker, Erin R Kulick, *NO<sub>2</sub> exposure and lung function decline in a cohort of adults in Mysore, India*, 2021, *Environmental Research Communications*, ISSN: 2515-7620 (INTERNATIONAL).
  41. Shivaprakash S, Georg Feigl, Sandeep M Diwan, *Anatomy of Brachial Plexus Above The Clavicle*, 2021, *International Journal of Regional Anaesthesia*, Vol.2, Issue.1, P-29-34, (NATIONAL).
  42. Bellipady Shyam Prasad Shetty, George D'Souza, Dr Mahesh P A, *Effect of Indoor Air Pollution on Chronic Obstructive Pulmonary Disease (COPD) Deaths in Southern Asia-A Systematic Review and Meta-Analysis*, 2021, *Toxics*, Vol.9, Issue.4, P-1-15, ISSN: 2305-6304 (INTERNATIONAL).
  43. G Vinay, W Benjamin, Aditya K Das, K H Raviprasanna, Dr Sunil Kumar D, *Morphometric study of the distal end of dry adult humerus of the South Indian population with its clinical applications*, 2021, *National Journal of Clinical Anatomy*, Vol.10, Issue.2, P-70-74, ISSN: 2277-4025 (NATIONAL).
  44. Arturo Solís Herrera, Narasimha M Beeraka, Mikhail Y Sinelnikov, Vladimir N Nikolenko, Dimitry B Giller, Luis Fernando Torres Solis, Liudmila M Mikhaleva, Siva G Somasundaram, Cecil E Kirkland, Gjumrakch Aliev, *The Beneficial Effects of QIAPI 1<sup>®</sup> against Pentavalent Arsenic-Induced Lung Toxicity a Hypothetical Model for SARS CoV2-Induced Lung Toxicity*, 2021, *Current Pharmaceutical Biotechnology*, ISSN: 1389-2010 (INTERNATIONAL).
  45. Mzondo B., Dlamini N., Malan F.P., Labuschagne P., Bovilla V.R., Madhunapantula S.V., Maharaj V., *Dammarane-type triterpenoids with anti-cancer activity from the leaves of Cleome gynandra*, 2021, *Phytochemistry Letters*, Vol.43, Issue., P-16-22, ISSN: 1874-3900 (INTERNATIONAL).
  46. S Alyssa N, P A Mahesh, Hay S I, *Mapping routine measles vaccination in low- and middle-income countries*, 2021, *NATURE*, Vol.589, Issue.7842, P-415-415, ISSN: 0028-0836 (INTERNATIONAL).
  47. IRINA R GILYZOVA., NARASIMHA M BEERAKA., ELIZAVETA A KLIMENTOVA., KIRILL V BULYGIN., VLADIMIR N NIKOLENKO., ADEL A IZMAILOV., GULSHAT R GILYZOVA., VALENTIN N PAVLOV., ELSA K KHUSNUTDINOVA., SIVA G SOMASUNDARAM., CECIL E KIRKLAND., GJUMRAKCH ALIEV, *Novel microrna binding site snps and the*

- risk of clear cell renal cell carcinoma (Ccrcc): A case-control study, 2021, *Current Cancer Drug Targets*, Vol.21, Issue.3, P-203-212, ISSN: 1568-0096 (INTERNATIONAL).
48. Kuo Chen, Jingruo Li, Pengwei Lu, Narasimha M Beeraka, Anterior Abdominal Wall Defect Closed by the Anterior Sheath of the Upper Rectus Abdominis Muscle in a Patient with Prior “TRAM Flap Breast Reconstruction”, 2021, *Indian Journal of Surgery*, ISSN: 0972-2068 (NATIONAL).
  49. Vladimir N Chubarev, Narasimha M Beeraka, Palmiro Poltronieri, Siva G Somasundaram, Kuo Chen, Olga A Sukocheva, Mohammad Amjad Kamal, Etheresia Pretorius, Cristian Muresanu, Health Science Community Will Miss This Bright and Uniting Star: In Memory of Professor Gjumrakch Aliev, M.D, Ph.D, 2021, *Cancers*, Vol.13, Issue.8 ISSN: 2072-6694 (INTERNATIONAL).
  50. Kavitha Ravi, Vijaya Srinivas, Anisa Khan, SubbaRao V Madhunapantula, Poornima Jayakrishna, Karl Krupp, Sasha Herbst De Cortina, Holly Nishimura, Purnima Madhivanan, Community-based Mobile Cervical Cancer Screening Program in Rural India: Successes and Challenges for Implementation, 2021, *Asian Pacific Journal of Cancer Prevention*, Vol.22, Issue.5, P-1393-1400, ISSN: 1513-7368 (INTERNATIONAL).
  51. Kandamaran Krishnamurthy, Dr Ramesh Madhan, Seetharaman Hariharan, Dr Mahesh P A, Mamidipudi Thirumala Krishna, Reham Mohamed El Shabrawy, Thushara Kudagammana, Biraj Karmacharya, Stevent Sumantri, Pudupakkam K Vedanthan, Is spurious penicillin allergy a major public health concern only in high-income countries?, 2021, *BMJ Global Health*, Vol.6, Issue.5, ISSN: 2059-7908 (INTERNATIONAL).
  52. Dr Mahesh P A, Chronic airflow obstruction and ambient particulate air pollution, 2021, *Thorax*, ISSN: 0040-6376 (INTERNATIONAL).
  53. Shalini Kunhikannan, Colleen J Thomas, Ashley E Franks, Dr Sumana M N, Dr Sumana K, Steve Petrovski, Environmental hotspots for antibiotic resistance genes, 2021, *MicrobiologyOpen*, Vol.10, Issue.3, ISSN:
  54. SubbaRao V Tulimilli, Narasimha M Beeraka, Medha Karnik, Gjumrakch Aliev, Dr Subba Rao M V S S T, Surya P Sadhu, Rajeswara Rao Pragada, The Current Status and Challenges in the Development of Vaccines and Drugs against Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2), 2021, *BioMed Research International*, Vol.2021, P-1-20, ISSN: 2314-6133 (INTERNATIONAL).
  55. Meredith Mario Wormald, Dr Thippeswamy H M, Dr Prashanth S N, Dr Devananda Devegowda, Dr Nanditha Kumar M, The association of fluoride in drinking water with serum calcium, vitamin D and parathyroid hormone in pregnant women and newborn infants, 2021, *European Journal of Clinical Nutrition*, P-1-9, ISSN: 0954-3007 (INTERNATIONAL).
  56. Marissa B Reitsma., Mahesh P A, Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019, 2021, *The Lancet*, Vol.397, Issue.10292, P-2337-2360, ISSN: 0140-6736 (INTERNATIONAL).