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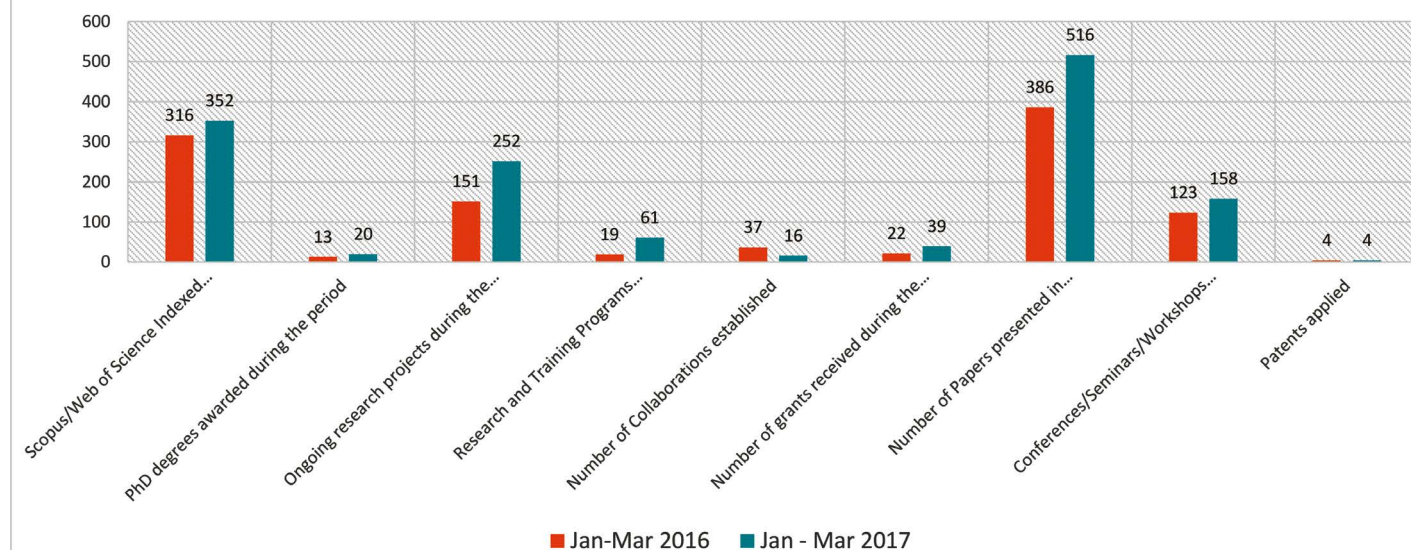
# Part I



Manipal University (MU) is one of the premier universities in India. MU considers both academics and research, equally important for the betterment of the institution. The faculty members and the research scholars at MU have embraced the research culture. They publicize their research work in scientific publications, through presentations in various conferences, by obtaining patents and research grants, etc. In this report, we present to you **an overview of the research activities** at Manipal University, during the period **Jan-Mar 2017**.

## A. Details of research activities of Manipal University for the period Jan-Mar 2017

Research activities during Jan-Mar 2017



## B. Faculty and institution achievements

1. Researchers at Dept of Biophysics, School of Life Sciences (SLS), Manipal University, Manipal, India and Institute of Biophotonics, National Yang-Ming University, Taipei, Taiwan developed Stokes Polarimeter based on nonlinear optical microscopy (second harmonic generation (SHG)) to investigate starch gelatinization. The findings are published in an article entitled "Investigating starch gelatinization through strokes vector resolved second harmonic generation microscopy" in the Nature Publishing Group (NPG) Journal **Scientific Reports**.
2. Dr Girish Pai K, faculty, Dept of Pharmaceutics, is appointed as visiting professor at Pharma Training Institute (PTI), Bengaluru. PTI, under the aegis of the Karnataka Pharmaceutical Trust and first of its kind was formed and registered in 1993. Former Drug Controller of Karnataka and Principal of Government College of Pharmacy, Professor V B Desai is the Chairman of the Trust and other trustees include five leading industrialists from Bengaluru and another former Drug Controller of Karnataka State. Pharma Training Institute, popularly known as PTI, was established in 2008 with the main aim of fulfilling the long pending desire to bridge the gap between academia and industry. Dr Pai is the only faculty from academics and rest of the faculty members are former officials of drug control department, Karnataka and technical heads from reputed pharmaceutical companies.



3. Dr T S Murali, Associate Professor, Dept of Biotechnology, SLS, Manipal University, Manipal has been nominated to the council of Mycology Society of India (MSI). The tenure of council member is three years. Mycologists of proven eminence in research and leadership from each region in the country are nominated as council members. These council members work as a team to establish and develop the activities of society in the respective region.



4. The SLS, Manipal University, Manipal became the third student chapter of the Optical Society of America (OSA) in Karnataka, and the 35th in the country recently. Dr H Vinod Bhat (Vice Chancellor, Manipal University) inaugurated the "Manipal University OSA Student Chapter" on February 13, 2017 at the premises of SLS in the presence of Dr K Satyamoorthy (Director, SLS), Dr N Udupa (Director, Research-Health Sciences), Dr B S Satish Rao (Associate Director-Research, SLS), Dr Padmalatha S Rai (Associate Director-Academics, SLS) and Dr K K Mahato (Head, Dept of Biophysics, SLS) and a host of faculty, staff, and student members of the newly inaugurated chapter.

5. The Directorate of Research and the SLS, Manipal University, Manipal along with the Wellcome Trust/DBT India Alliance, Government of India, organized a one-day workshop for PhD scholars and young faculty members on Monday Feb 13, 2017 at the SLS campus. The workshop was inaugurated by Dr H Vinod Bhat, Vice Chancellor, Manipal University, Manipal in the presence of Dr Ajay Pillai, Grants Manager, Dr Madhankumar Anandhakrishnan, Grants Adviser and Dr Sarah Iqbal, Public Engagement Officer of Wellcome Trust/DBT India Alliance, Government of India, New Delhi, Dr N Udupa, Director Research-Health Sciences, MU, and Dr K Satyamoorthy, Director, SLS. More than 70 young faculty members and research scholars took part in the workshop.





5. The Depts of Anaesthesiology, Orthopaedics, and General Surgery, with the help from Community Medicine and Forensic Medicine, Kasturba Medical College (KMC), Manipal held a workshop on pre-hospital trauma care program for ambulance personnel, police, firemen, and rickshaw drivers on how to handle trauma victims at the site till they are transferred to a hospital. The concept of Golden hour, importance of maintenance of airway, breathing, circulation, and haemorrhage control was emphasized.



6. Dr H Y Prahlad, Assistant Professor, Dept of Radiotherapy, underwent UICC International Cancer Technology Transfer (ICRETT) Fellowship under Prof Avraham Eisbruch at University of Michigan, Ann Arbor, USA from Feb 20, 2017 to Mar 22, 2017.
7. Manipal College of Pharmaceutical Sciences, Manipal University is ranked in the range of 250-300 in the QS World Ranking Pharmacy and Pharmacology.

### C. Achievement by research scholars

1. Mr Vaibhav Shukla and Ms Swathy P S, research scholars of SLS, Manipal University have won first prize in health science and agricultural sciences category respectively in the "Anveshan: Student's research convention 2017" organized by Association of Indian Universities, New Delhi held at Tumkur university during Feb 14-15, 2017 for the south zone. Anveshan is a Student Research Convention launched by the Association of Indian Universities (AIU) aimed at identifying and nurturing research talent of the young and budding researchers in the country.

Mr Vaibhav Shukla is currently a structured PhD program scholar under the supervision of Dr K Satyamoorthy, Professor and Director, SLS, Manipal University, Manipal. Mr Shukla is presently working on the identification of differentially expressed microRNAs to delineate their role in cervical carcinogenesis. Mr Vaibhav Shukla is one of only three participants selected for the final National level competition, going to be held in Annamalai University from Mar 27-29, 2017. Ms Swathy P S is a structured PhD program scholar under the supervision of Dr A Muthusamy, Associate professor, SLS, Manipal University, Manipal. Ms Swathy is presently working on the project: "Biochemical and molecular characterization of bioactive molecules in He-Ne laser irradiated brinjal (*Solanum melongena*)."

Her project has been selected for the final National level competition, going to be held in Annamalai University from Mar 27-29, 2017.

2. Ms Suma Prabhu has received the Young Scientist Award for her work on "Comparative Toxicological Evaluation of Bare and PEGylated Superparamagnetic Iron Oxide Nanoparticles for Clinical Applications" at International Conference on Advances in Cellular, Genomic and Epigenomic Insights on Environmental Mutagenesis and Health and 41st Annual Meeting of Environmental Mutagen Society of India (EMSI), from Jan 27-29, 2017 organized by SLS, Manipal University, Manipal. She received the award from Dr Angela Brand (Director of the European Centre for Public Health Genomics). She received a one year free subscription (print and online) to Public Health Genomics for the year 2017. Ms Suma is a Structured PhD Research Fellow at the Dept of Radiation Biology and Toxicology, SLS, Manipal University, Manipal and is working under the guidance of Prof B S Satish Rao, Associate Director of Research and Head, Dept of Radiation Biology and Toxicology, SLS, Manipal University, Manipal.

#### **D. Awards and accolades**

1. Mr Shubhankar Das, Research Scholar at the Dept of Radiation Biology and Toxicology, SLS, Manipal University, received Best Poster Award for his poster entitled "Mitochondrial Dysfunction as a Key Indicator of Cellular Dysfunction during Mercury Intoxication" in International Conference on Advances in Cellular, Genomic, and Epigenomic Insights on Environmental Mutagenesis and Health and 41st Annual Meeting of Environmental Mutagen Society of India (EMSI) hosted by SLS, Manipal University at Manipal from Jan 27-29, 2017. Mr Shubhankar is a Structured PhD candidate working under the supervision of Dr B S Satish Rao, Associate Director (Research) and Head, Dept of Radiation Biology and Toxicology, SLS, Manipal University, Manipal.
2. Mr Manik Vohra, Senior Research Fellow, SERB at Dept of Biotechnology, SLS, Manipal University was awarded consolation prize for his poster entitled "Genetic and Epigenetic patterns of MTHFD1 gene in Type 2 Diabetes in the background of Obesity" at 41st Annual Meeting of Environmental Mutagen Society of India (EMSI) and International Conference on Advances in Cellular, Genomic, and Epigenomic Insights on Environmental Mutagenesis and Health held from Jan 27-29, 2017 organized by SLS, Manipal University. Currently, Mr Manik is working under the guidance of Prof Padmalatha S Rai in the SLS, Manipal University, Manipal, Karnataka.
3. Dr Rashmi K S, Lecturer, Dept of Physiology, KMC, Mangalore has been awarded second place for the best oral presentation in National Conference on Exercise Physiology and Movement Sciences CHETPHYSI-EXCON-2017 held from Mar 3-4, 2017 in Chettinad Hospital and Research institute, Kanchipuram, Tamil



Nadu. Her presentation was titled – “A study on neurotransmitter level in Orexin B mediated exploratory and anxiety like behaviour in male Wistar rats.” This work is guided and co-authored by Dr Ganaraja B, Additional Professor, Physiology, KMC, Mangalore.

4. Dr Prasanna L C, Associate Professor, Dept of Anatomy, was awarded with Certificate of Best Presentation Award, at the 19th International Conference on Applications of Cardiology and Human Anatomy, Dubai, UAE.
5. Dr Suhani S D'Silva, Assistant Professor, Dept of Anatomy, was awarded with 2nd Best Research Poster Award at the, 5th Congress of Asian Society of Head and Neck Oncology (ASHNO) 2017 Held at Bali, Indonesia from Mar 23-25, 2017 for her paper “Variant course of the maxillary artery and its relation to the lingual nerve in the infratemporal fossa.”
6. Dr Veena Kamath, Professor, Dept of Community Medicine, rewarded with Best e-poster award, IPHACON 2017, Health Seeking Behaviour of individuals screened positive for Diabetes and Hypertension under the NPCDCS: A community based study, IPHACON at AIIMS, Jodhpur, Rajasthan from Feb 24-26, 2017.
7. Dr Chythra R Rao, Associate Professor, Dept of Community Medicine awarded for the best oral paper on “Assessment of obstetric risk factors for pre-term birth in an antenatal cohort” presented at the 61st Annual National Conference of Indian Public Health Association and First State Conference of IPHA Rajasthan (IPHACON-2017) organized by Dept of Community Medicine and Family Medicine AIIMS, Jodhpur, Rajasthan held from Feb 24-26, 2017.
8. Dr Asha Kamath, Associate Professor, Dept of Community Medicine, awarded with Best e-poster award, IPHACON 2017, Does nutritional intake have an association on the elderly wellbeing, IPHACON at AIIMS, Jodhpur, Rajasthan from Feb 24 to 26, 2017.
9. Mr Ramesh Babu, Senior Grade Lecturer, Dept of Physiology was awarded Best poster presentation, titled “Functional connectivity between prefrontal cortex and hippocampus in meditators” at SYMMEDCON 2017, International Conference on Stress, Yoga, and Mind-Body Medicine held from Jan 2-3, 2017 in Sri Ramachandra Medical College, Porur, Chennai.
10. Dr Ashwini A P, Senior Resident, Dept of OBG, was awarded 2nd prize in scientific poster presentation, titled “Perinatal death-an unsolved mystery” at Manipal genetics update IV conference held from Mar 2-3, 2017 at KMC, Manipal.
11. Dr Shashikala K Bhat, Professor of OBG, Melaka Manipal Medical College (MMMM) was awarded best paper, titled “Predictability of Gestational diabetes mellitus (GDM) using insulin resistance in early pregnancy” in the DIPSI National Conference 2017, held at Lucknow, Uttar Pradesh from Mar 24-26, 2017.
12. Dr Vijayalaxmi, Associate Professor, Dept of E and E, Manipal Institute of Technology (MIT), Manipal bagged best paper award for the paper titled “An intelligent approach for option pricing” at an event held at K J Somaiya Institute of Management Studies and Research, Vidyavihar, Mumbai from Jan 13-14, 2017 (SIFICO 2017). The paper was co-authored by Dr C S Adiga of MIT Manipal and H G Joshi of MIM Manipal.
13. Dr Santhosh Kamath, MIT was awarded “VMware Educator award” for taking lead in empowering students and faculties on VMware technologies at MIT, Manipal.

# Part II

## A. Featured scientist of Manipal University

### Professor Ashok Rao

#### Dept of Physics, MIT, Manipal University, Manipal



Dr Ashok Rao started his early education in Delhi and received BSc degree in Physics from St Stephen's College in 1986. He obtained MSc and PhD qualifications from Delhi University in 1988 and 1994 respectively. Dr Rao commenced his teaching career at St Stephen's in Delhi for four years. Thereafter, he moved to Sikkim in 1997 to join as Head of the Department in a newly established Institute by Manipal Group called Sikkim Manipal Institute of Technology (SMIT). He successfully defended a Fund for Improvement of Science and Technology (FIST) project funded by Department of Science and Technology (DST) during 2005. After completing ten years as Head of the Department at SMIT, he shifted to Manipal Institute of Technology (MIT) in the year 2007. Dr Rao was the Head, Dept of Physics during 2009-2015 and during his tenure as Head, initiated research activities and motivated faculty members to apply for funded projects. He has guided seven PhD students and 25 postgraduates and has published over 60 research papers in Scopus indexed international journals of good repute. Dr Rao is a recipient of the Dr TMA Pai Endowment Chair in clean energy.

His research areas include:

- (a) High temperature superconductors;
- (b) Magnetic materials for energy applications;
- (c) Thermoelectric materials for applications in area of clean energy;
- (d) Low temperature physics; and
- (e) Magnetic sensors.

Dr Rao is an experimental solid state physicist and since his PhD days, has been mainly working on thermal and electrical properties of different materials at low temperatures and the effect of magnetic field on these materials. The materials include superconductors, manganites, and thermoelectrics. He has been working on experimental work wherein homemade instruments have been frequently used.

For a budding researcher, Dr Rao stresses that a researcher must be hard working and should believe in the policy that success can be achieved only if a researcher tries his/her best. Another important aspect is that research is no longer an individual work; it is a team-work and collaboration is the key to success. An important aspect in research is honesty, which is always of prime importance to success. Most of the scientific and technological research is done keeping in mind that it should be beneficial to mankind and that can be the best motivation for any kind of research. One more area which budding researchers should concentrate is applying as many projects as possible and keep on applying until they succeed. In externally funded projects, the success rate is low and hence, often we encounter failures, which are challenging. One should take failure as a stepping-stone towards future success. In addition, they should be aware that they must maintain high standards of ethics and integrity in their research endeavour to succeed.

Talking about his plan, Dr Rao emphasized that research and teaching is inter-linked. As mandate of the Dr TMA Pai Endowment Chair in clean energy, he wishes to establish a Centre for Clean Energy. He is in the process of applying for various externally funded projects and wishes to establish a state of the art centre. As an outcome,



he would like to offer courses in clean energy, which he hopes to convert into a post graduate program in clean energy. Dr Rao is quite optimistic of fulfilling his dream and believes that it will come true one day.

Dr Rao was all praise about the Manipal University Research Bulletin (MURB) for its content and quality. In his opinion, MURB can be a platform to publish good quality student papers.

### B. Top publications for the period Jan-Mar 2017

Title of The Publication	Author Name (Manipal University Affiliated)	Institution	Department	Journal	Month and Year of Publication	1-Yr Impact Factor
Mutations in EBF3 disturb transcriptional profiles and cause intellectual disability, ataxia, and facial dysmorphism	Girisha K M and Anju Shukla	KMC, Manipal	Department of Medical Genetics	American Journal of Human Genetics	Jan 2017	10.79
"Solar parabolic trough collectors: A review on heat transfer augmentation techniques"	H M Sandeep and U C Arunachala	MIT, Manipal	Department of Mechanical and Manufacturing Engineering	Renewable and Sustainable Energy Reviews	Mar 2017	6.79
Investigating starch gelatinization through Stokes vector resolved second harmonic generation microscopy	Nirmal Mazumder	SOLS	Department of Biophysics	Scientific Reports	Mar 2017	5.22
First evidence of denitrification vis-à-vis monsoon in the Arabian Sea since late Miocene	Gurumurthy G P	MCNS	Natural Sciences	Scientific Reports	Feb 2017	5.22
Regenerative therapy for hippocampal degenerative diseases-Lessons from preclinical Studies	Anandh D	SORM, Bangalore	Regenerative Medicine	Journal of Tissue Engineering and Regenerative Medicine	Feb 2017	4.71
Genetic variants in CD44 and MAT1A confer susceptibility to acute skin reaction in breast cancer patients undergoing radiation therapy	Satyamoorthy K, Kamalesh D Mumbreakar, Sathish Rao B S, and Shama Prasad K	SOLS	Department of Biotechnology, Radiation Biology and Toxicology	International Journal of Radiation Oncology Biology Physics	Jan 2017	4.49
Numerical Analysis of the Influence of Spherical Turbulence Generators on Heat Transfer Enhancement of Flat Plate Solar Air Heater	M S Manjunath, K Vasudeva Karanth, and N Yagnesh Sharma	MIT, Manipal	Department of Mechanical and Manufacturing Engineering	Energy	Feb 2017	4.21



## Part III

### Manipal University Students' Research Forum (MUSRF)

1. The new Executive Council (EC) of Manipal University Students' Research Forum (MUSRF) was inducted on Jan 3, 2017. The EC of MUSRF is for a period of one year. The council is mentored by two faculty members, one each from Health and Technical Sciences. Dr Raviraj Adhikari, Professor, MIT, Manipal University, Manipal is appointed as faculty mentor for Technical Sciences and Dr B S Sathish Rao, Associate Director-Research and Head, Dept of Radiation Biology and Toxicology, SLS, Manipal University, Manipal is identified as faculty mentor for Health Sciences.

#### The new council members are listed in the table below:

Designation	Name		Institution
<b>President</b>	Ipsita Pujari	Research Scholar	School of Life Sciences, Manipal
<b>Vice President</b>	Shikhar Srivastava	Student	Manipal Institute of Technology, Manipal
<b>Vice President</b>	Saurish Reddy	Student	Kasturba Medical College, Manipal
<b>General Secretary</b>	Akanksha Roy	Student	Manipal College of Dental Sciences, Manipal
<b>Joint Secretary</b>	Ansu Ann Abraham	Student	Manipal College of Dental Sciences, Mangalore
<b>Joint Secretary</b>	Subham Sarthak	Student	Kasturba Medical College, Mangalore
<b>Treasurer</b>	Deepak Joyappa	Research Scholar	School of Communication, Manipal
<b>Public Relations Officer</b>	Amitha Puranik	Research Scholar	Department of Statistics, MU, Manipal

2. MUSRF played a vital role in supporting activities during the preliminary screening of the projects at MIT campus, under the guidance of Dr Raviraja Adhikari, MUSRF 2017 technical sciences mentor, on Jan 20, 2017 for ANVESHAN, south zone convention, which was scheduled from Feb 14 to 15, 2017 at Tumkur University, Tumkur. "Anveshan: Students Research Convention" was organized by Association of Indian Universities, New Delhi. Projects from various fields like Agriculture, Basic Sciences, Engineering and Technology, Health Sciences and Allied Subjects, Pharmacy, Nutrition, etc. were selected.



### **Editorial Team**

1. Dr N Udupa, Director Research (Health Sciences)  
Manipal University, Manipal
2. Dr Satish Shenoy, Director Research (Technical)  
Manipal University, Manipal
3. Dr Raghu A R, Deputy Director Research (Health Sciences)  
Manipal University, Manipal
4. Dr Santhosh K V, Deputy Director Research (Technical)  
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