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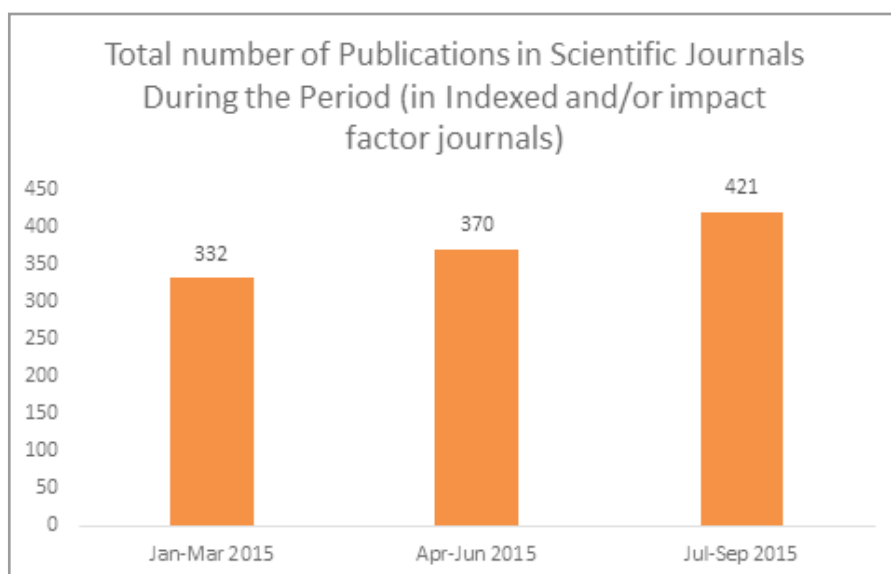
Activities of Manipal University Students' Research Forum (MUSRF)

Part I

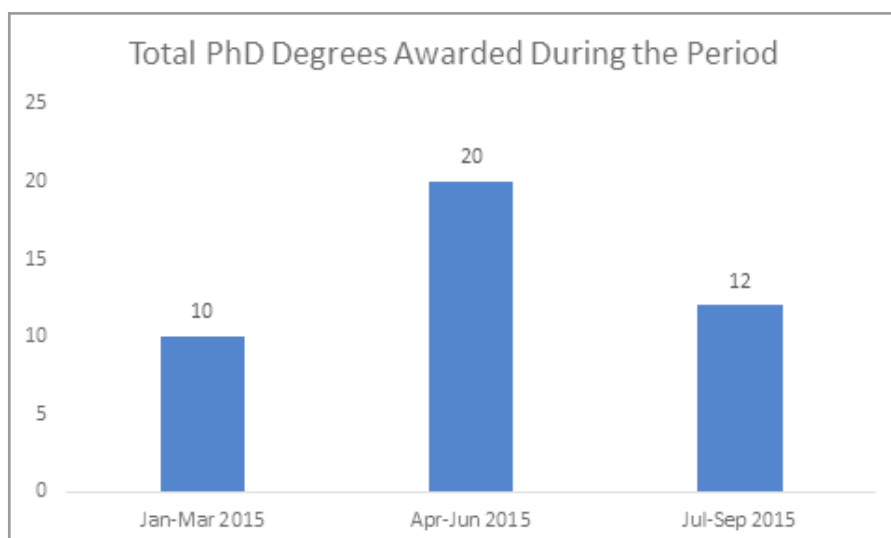
Manipal University (MU) is one of the premier universities in India. MU considers both research and academics equally important for the betterment of the institution. The faculty members and the research scholars at MU have embraced the research culture and publicize their research works in scientific publications, through presentations in various conferences and by obtaining patents, research grants, etc. In this report, we present to you an overview of the research activities of Manipal University held during Jul-Sep, 2015.

A. Details of Research Activities of Manipal University during Jul-Sep, 2015

a. Total number of Publications in the Scientific Journals (in Indexed and/or impact factor journals)

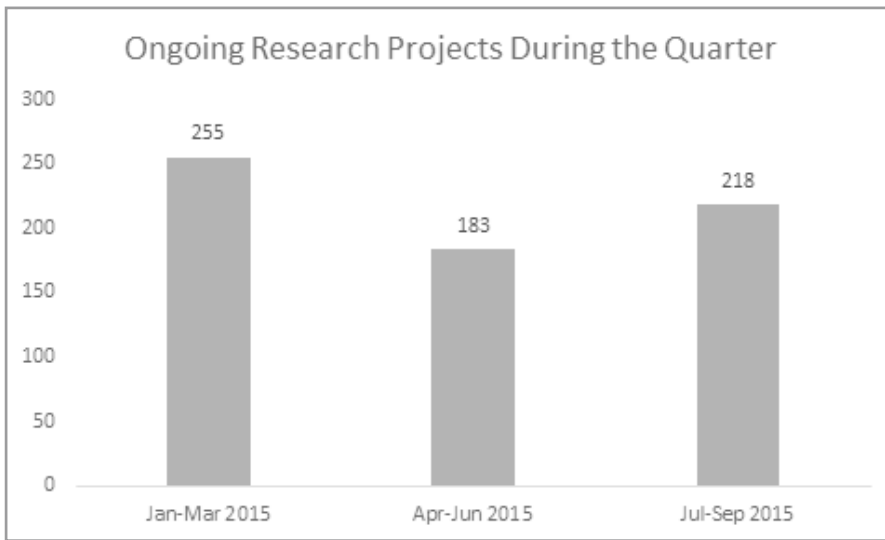


b. Total Number of Ph D Degrees Awarded

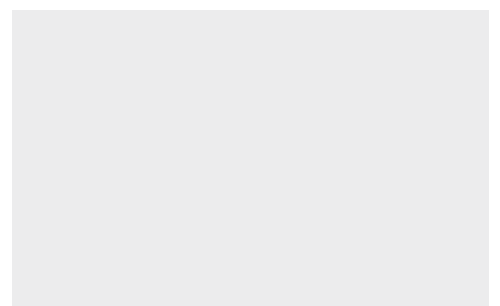
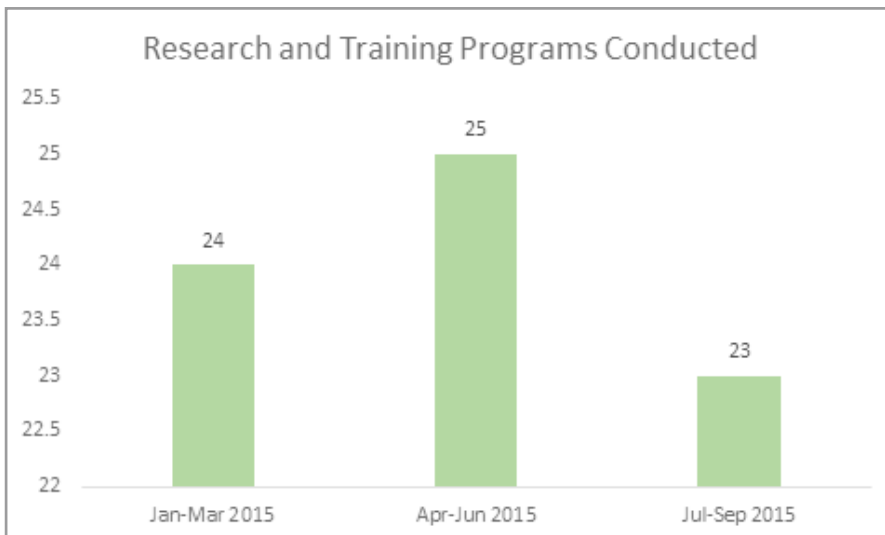


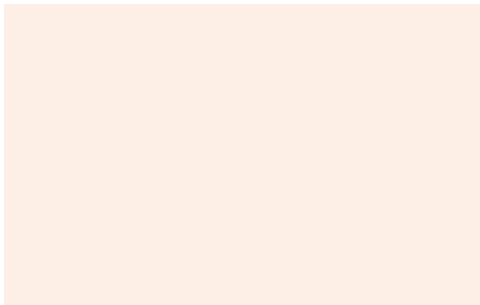


c. Ongoing Research Projects

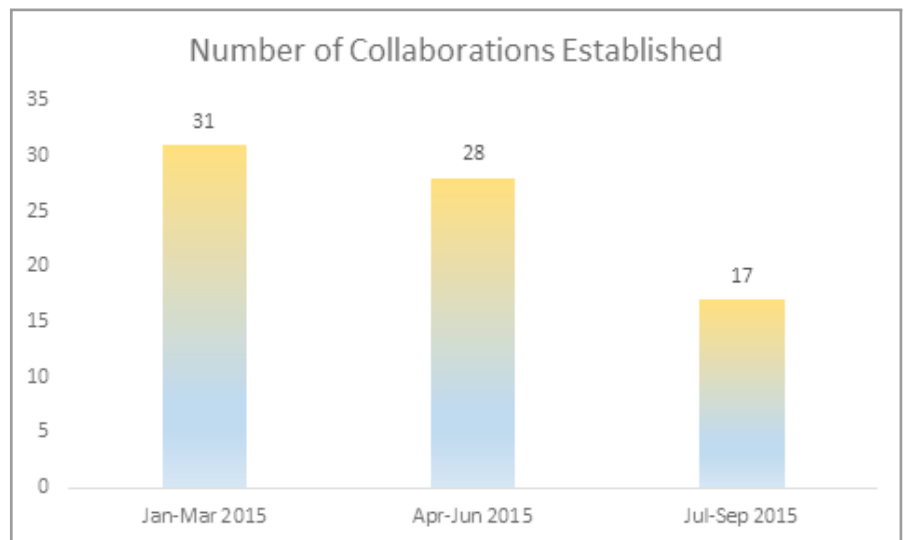


d. Research and Training Programs Conducted

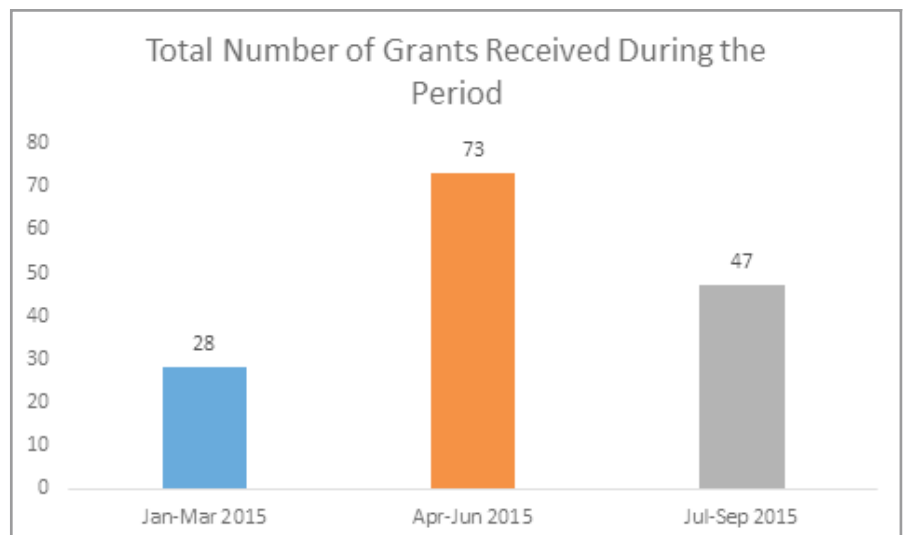




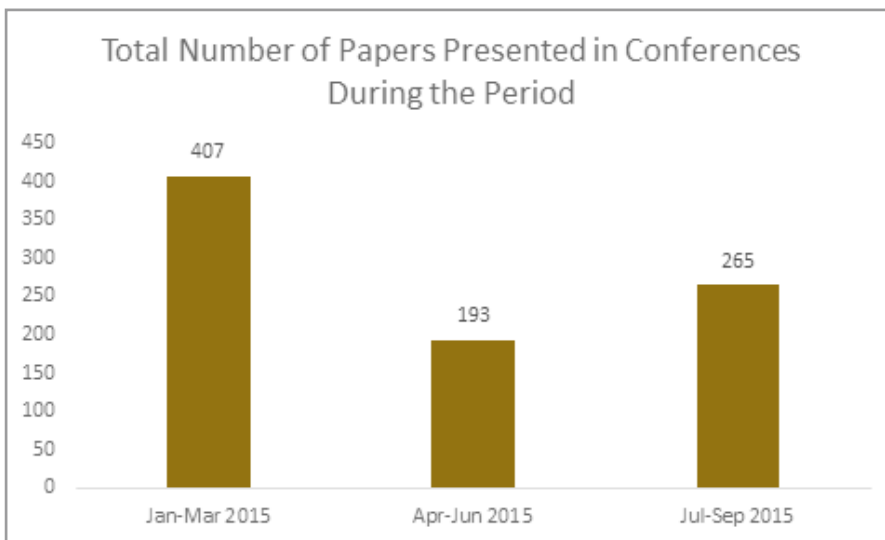
e. Number of Collaborations established



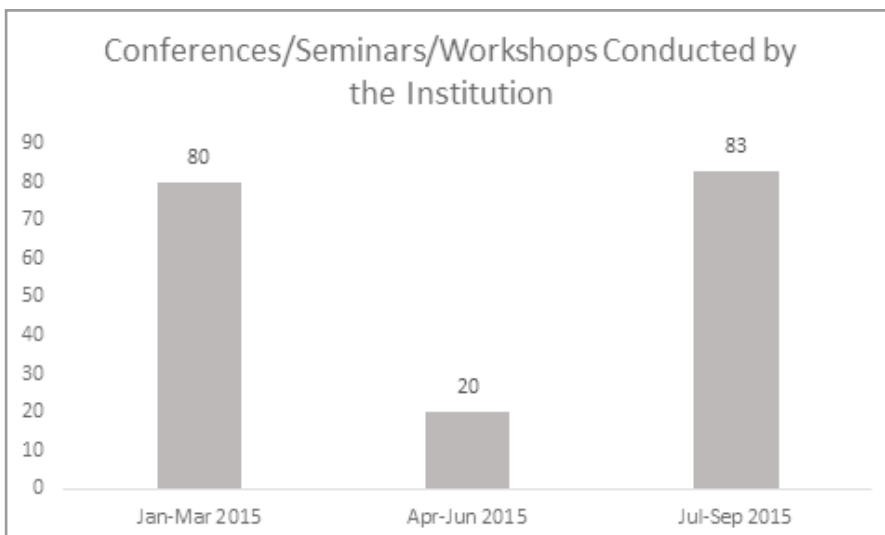
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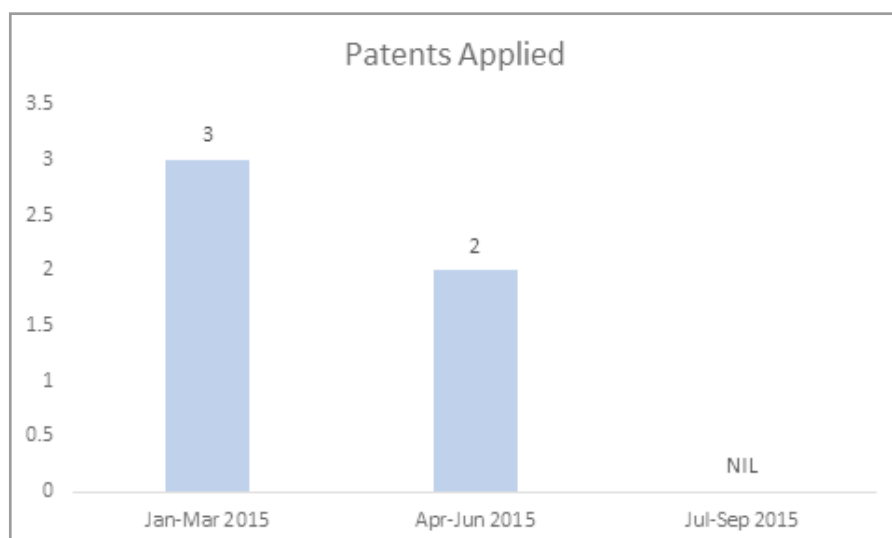
g. Total Number of Papers Presented in Conferences



h. Conferences/Seminars/Workshops Conducted



i. Patents Applied



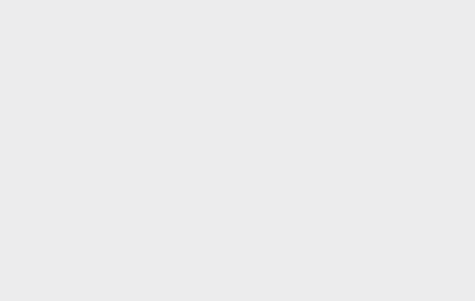
B. Achievements by Faculty Members

1. Dr Sreedharan (Associate Professor, Dept of Pharmacy Practice) received a scholarship from the International Society for Pharmacoepidemiology (ISPE) to attend the 31st International Conference on Pharmacoepidemiology and Therapeutic Risk Management (ISPE) at Hynes Convention Centre, Boston, from August 23 to 26, 2015 to present his poster on 'Clinical Manifestations and Treatment Patterns of Systemic Lupus Erythematosus'. He also received a travel grant from the Indian Council of Medical Research (ICMR), New Delhi. He visited the School of Pharmacy, University of Wyoming, USA during this trip.
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2. Dr A Muthusamy, Associate Professor, Division of Biotechnology, School of Life Sciences, Mr Raviraj Devkar, Research Scholar, Manipal College of Pharmaceutical Sciences and Mrs Shruthi Balakrishnan, Research Scholar, Manipal Institute of Technology,



Manipal University, Manipal, received first prize for Oral presentation on the topic titled “Impact of Climate Change on Agriculture and Horticultural Crops- an Overview”, at Indian Institute of Forest Management (IIFM), Bhopal, MP. The theme of the conference was ‘Youth Ready for Climate Change Transformation’. The conference was sponsored by DST and EPCO and organised by IIFM on July 28 – 29, 2015.

3. Dr M K Unnikrishnan, Professor and Head, Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, was a speaker for The Young Pharmacists’ Group -The International Pharmaceutical Federation (YPG-FIP) webinar on “Health Care Problems in India: A Resource Poor Nation With a Flourishing Pharmaceutical Industry” on Aug 5, 2015. FIP is the global body representing pharmacy and pharmaceutical sciences, and over three million pharmacists and pharmaceutical scientists around the world, founded in 1912. This YPG webinar discussed the key issues concerning Indian healthcare system, lack of government support on public health policy and health insurances.
4. Dr Babita KS from School of Life Sciences was one of the 50 participants selected for the “International Training Programme on Leadership and Career Development for Women Scientists/ Technologists” sponsored by Department of Science and Technology, Government of India, New Delhi & Indo US Science and Technology Forum, New Delhi. The program was coordinated and organized by Indian Institute of Science Education and Research Pune and International Partner, COACH International University of Oregon, Eugene, OR 97403-1253 USA at Indian Institute of Science Education and Research, Pune from August 28, 2015 to September 1, 2015.
5. Dr Manish Bhagania was invited for the AOCCMF Fellowship at the Department of Oral and Maxillofacial Surgery, Ludwig Maximilian



University, Munich from June 22-August 14, 2015. He was also invited for Guest House Surgeon Observership at the Department of Oral and Maxillofacial Surgery, Freiburg University, Germany for ten days.

6. Dr Shrikala Baliga was invited to participate in the First Global Health Diagnostics Course conducted by Mc Gill Summer Institute in Infectious Diseases and Global Health, Mc Gill University, Montreal Quebec, Canada, from July 6 to 10, 2015. It was attended by 150 invitees from all over the world. The course was designed to address diagnostic issues in diseases like TB and HIV and neglected Tropical diseases. The focus was on POCT, multiplexed testing, regulation and Quality assurance. Dr Shrikala Baliga was invited to participate in two panel discussions on “What Are the Critical Diagnostic Needs in Resource Limited Countries and Quality Assurance for Rapid Testing”. Dr Shrikala Baliga also participated in the Fifth Advanced TB Diagnostic research Course conducted by the same university from July 13 to 17, 2015. This course focused on the new target product profiles for TB diagnostics development, reference standards, implementation research and qualitative research.
7. Dr Srinivas Mutalik, Professor of Pharmaceutics, Manipal College of Pharmaceutical Sciences(MCOPS) has been appointed as Honorary Professor in Pharmacy Australia Centre of Excellence (PACE), University of Queensland. University of Queensland is listed among the top 100 universities globally. MCOPS is proud of his achievement and congratulates him profusely.
8. Dr Vamshi Krishna, Assistant Professor [Senior Scale] of Pharmaceutics, Manipal College of Pharmaceutical Sciences has secured a postdoctoral fellowship for one year in Universidade do Vale do Paraíba, Brazil.

9. Manthan D Janodia, Associate Professor, Department of Pharmacy Management published his first book titled "Basic Concepts of Intellectual Property Rights". The book aims to simplify the complex issue of Intellectual Property in a simple and lucid way. Honourable Vice Chancellor of Manipal University, Dr H Vinod Bhat released the book on August 11 2015 along with Dr N Udupa, Director Research (Health Sciences), Manipal University. The book is published by Manipal University Press.

Best Paper Awards

1. Dr Indira Bairy, Professor of Microbiology, MMMC Manipal won the best poster award for her work titled "In Vitro Synergistic Activity of Lysostaphin Combined with Linezolid against Methicillin Resistant Staphylococcus Aureus" at the World Pharmacology Congress held at Brisbane Australia during July 20 to 22 2015. The award has been attributed in recognition of research paper quality, novelty and significance.
2. Mr Guruprasad Rao, Department of Commerce, received "Best Paper" Award for the research paper titled "An Empirical Study on Green Banking in India" at the Annual International Conference organized by Innovative Research Publication, USA scheduled at Pattaya, Thailand on July 11-12, 2015.
3. Dr Umesh Pai, Associate Professor, Department of Prosthodontics, won the second prize for the paper titled "Current trends in measuring implant stability-a review" in the faculty free paper category at the 22nd ISOI conference held at Mangalore from September 11 to 13, 2015.

4. Ms Krithica S, Department of Optometry, School of Allied Health Sciences, received the best poster award and Innovation in education award at the ESO International Vision Science and Optometry Conference 2015, August 2015.
5. Mr Ramesh Unnikrishnan, Department of Respiratory Therapy, School of Allied Health Sciences, was awarded International fellowship by American Respiratory Care Foundation (ARCF)/ American Association for Respiratory Care (AARC).
6. Dr Ravindra M. Assistant Professor, Department of Psychiatry, Kasturba Medical College received Dr M Dhruva Kumar award by Indian Psychiatric Society, Karnataka Chapter on August 29, 2015 at Shimoga for Best Psychotherapy by a Mental Health Professional in the year 2014-2015.
7. Dr Shalini S Menon, Department of ENT, Kasturba Medical College, received Dr S K Mondal award for the best surgical video presentation on "Endoscopic excision of intranasal meningocele and repair of anterior skull base defect" during 33rd AOIKCON 2015 at NIMHANS Convention Center, Bangalore from September 18 to 20, 2015.
8. Ms Sushma R K, Lecturer, Department of Anatomy, Kasturba Medical College was awarded Second Prize for the Scientific work – Original research category titled "Facial Nerve in Fetal cadavers – An Anatomical Study with Clinical Relevance" presented at the International Symposium on Head & Neck tumours – Translation from Cancer Biology to Cancer Medicine: organized by Department of Oral Pathology & Microbiology, Manipal College of Dental Sciences, Manipal on October 3 and 4, 2015.

9. Dr Sibhi Ganapathy, Department of Neurosurgery, Kasturba Medical College, was awarded the best paper for his talk on posterior fossa extradural hematomas at the IGCLA meeting at KMC , Manipal.

Conference Participation

1. Dr Unnikrishnan V K, Associate Professor and Ms Surya Harikrishnan, Assistant Professor, Department of Atomic and Molecular Physics, Manipal Institute of Technology, Manipal attended Conference on Laser Technology and Trade Fair Orlando, Florida. The conference was held during July 20-22, 2015. Oral presentation, made by Dr Unnikrishnan during the conference, was titled "Biomedical Applications of Plasma Spectroscopy", whereas Ms Surya Harikrishnan made oral presentation on the topic "Archaeophotonics". In addition to this, Ms Surya Harikrishnan also conducted a workshop titled "Spectroscopy in Archaeology" in response to a special request by the organizing committee of the event. The conference brought together eminent scientists from different parts of the world working in the fields of laser technology and its applications. The sessions included talks related to Photonics Engineering, Nanobiophotonics, Lasers in Industry and Medicine.
2. Faculty members of Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University bagged a large number of scholarships from the International Society for Pharmacoepidemiology (ISPE) to attend the ISPE'S Ninth Asia Conference on Pharmacoepidemiology to be held during November 14-16, 2015 in Thailand. Faculty members who received the scholarships include Dr Sreedharan N, Dr Vijayanarayana K, Dr Rajesh V, Dr Girish Thunga, Mr Sonal Sekhar M and Mr Prasanna K Shetty.

A. Achievement by Research Scholars

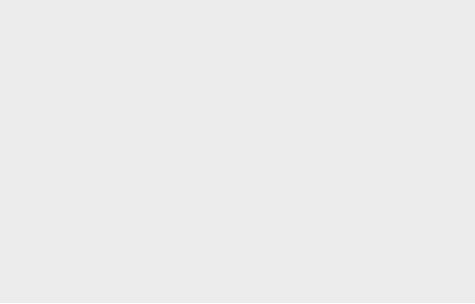
1. Dr Gurumurthy G P, Postdoctoral Research Fellow, Manipal Center for Natural Sciences, Manipal University participated in an International Ocean Discovery Program (IODP) expedition to Arabian Sea to recover deep sea sediments belonging to last <65 million years. He is one among the 30 scientists from different parts of the world to sail in JOIDES RESOLUTION, a deep sea drilling research vessel. Expedition was funded by IODP (a consortium of 26 countries), and IODP- India through Ministry of Earth Sciences, Government of India. The scientific team of the expedition was multidisciplinary and it comprised inorganic geochemists, organic geochemists, sedimentologists, palaeontologists, geophysicists, physical property specialists, microbiologists, igneous petrologists, stratigraphic correlators, and paleomagnetists from leading research institutes of India and abroad. He was responsible for inorganic geochemical characterization of samples. The broader scientific objective of the expedition was to study the evolution of Indian monsoon system following the collision of Indian subcontinent with Tibetan Plateau, and to decipher the genesis/nature of basement rock in the Arabian Sea. During the expedition, scientists recovered very interesting geological samples that may help in understanding the Indian subcontinent monsoon evolution and the history of Himalayan uplift. Dr Gurumurthy proposed to study the oxygen evolution in the tropical ocean (as recorded in the Arabian Sea sediments) and its relationship with major geological events. Expedition scientists have identified one of the largest underwater mass sediment transport deposits in the Arabian Sea.

Manipal University is the only private university from India to have participated in the IODP expedition, a large international marine research collaboration between 26 nations. IODP is dedicated to advance scientific understanding of Earth by sampling, instrumenting

and monitoring sub-seafloor environments using specialized ocean drilling platforms staffed by multidisciplinary research scientists. Preliminary findings of the expedition can be accessed through:

Pandey D K, Cliff P D, Kulhanek D K, Andò S, Bendle J A P, Bratenkov S, Griffith E M, Gurumurthy G P, Hahn A, Iwai M, Khim B -K, Kumar A, Kumar A G, Liddy H M, Lu. H, Lyle M W, Mishra R, Radhakrishna T, Routledge C M, Saraswat R, Saxena R, Scardia G, Sharma G K, Singh A D, Steinke S, Suzuki K, Tauxe, L, Tiwari M, Xu Z, and Yu Z, 2015. Expedition 355 Preliminary Report: Arabian Sea Monsoon. International Ocean Discovery Program. <http://dx.doi.org/10.14379/iodp.pr.355.2015>.

2. Mr Maktumhusen M Tamboli, Research Scholar, Department of Atomic and Molecular Physics, Manipal Institute of Technology, Manipal University, Manipal participated in a Summer School on Lasers and Laser Applications organized by Asian Laser Centre at APRI, GIST, Gwangju, South Korea. This summer school held during July 6-11, 2015, targeted the students and young scientists who are interested in the field of laser and photonics. The event included both lectures and experiments. The lecture topics included basic laser safety, fundamental and applied optics to emerging photonics, femto-second laser spectroscopy and laser micro machining. The experimental session covered a range of topics including laser interferometry, polarization and Faraday effect, optical coherent tomography, construction of ND: YAG laser and observation of atomic spectra.
3. Mr. Alkesh Kumar Lokhande, Research Scholar, Manipal College of Pharmaceutical Sciences, Manipal University bagged scholarship from the International Society for Pharmacoepidemiology (ISPE) to attend the ISPE'S Ninth Asia Conference on Pharmacoepidemiology to be held during November 14-16, 2015 in Thailand.

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4. Mr H M Devaraja a Ph D student at Centre for Natural Sciences, Manipal University participated in experimental work along with an international team of researchers at GSI Helmholtzzentrum für Schwerionenforschung. Other participants included scientists from the Justus Liebig University Giessen, Germany, the Japan Atomic Energy Agency, Lawrence Livermore National Laboratory in the USA and the Joint Institute for Nuclear Research in Russia. The results are published in Physics Letters B.

B. Student Achievements

1. Mr Awadh Kapoor final year B Tech student in the Department of Aeronautical Engineering, Manipal Institute of Technology, Manipal University, Manipal won the Best Academic Paper Award for his project thesis at the 3rd ESI Open FOAM User Conference 2015 held during October 19-21, 2015 in Stuttgart, Germany. Mr Awadh Kapoor would be representing Manipal University, the only Indian University to have participated in this event. Moreover, it is the first time an Indian university student has been recognized for this award in the past three editions. Mr Awadh competed with the participants from well-known universities like Delft University, Stuttgart University, Von Karman institute of Fluid Dynamics, University of Rostock as well as industries like BMW, Volkswagen, Robert Bosch, Augusta Westland, ALSTOM power to receive this award.
2. Ms Zoya Ahmed (Pharm D Intern), Department of Pharmacy Practice has been selected for Biotechnology Finishing School (BTFS) - 12 month post graduate diploma with a fellowship from Department of Biotechnology (DBT). BTFS is a unique initiative of the Government of Karnataka in collaboration with DBT, New Delhi. The selection process included the online test (KBAT) followed by an interview. The program comprises 6 months of academic training followed by 6 months of internship in an industry. The program is designed

to equip the graduate and post graduate students with appropriate employable skills in the industry.

3. Students of Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University bagged a large number of scholarships from the International Society for Pharmacoepidemiology (ISPE) to attend the ISPE'S Ninth Asia Conference on Pharmacoepidemiology to be held during November 14-16, 2015 in Thailand. Student recipients of this scholarships include twelve Pharm D students Ms Nishitha N Prabhu, Ms Thanmai V, Ms Kshipra K, Mr Amal Raj, Mr Prem Lal, Ms Parvathy Menon, Ms Zoya Ahmed, Ms Manasa Ch, Ms Gopika Krishnan, Ms Anuseeya Nadar, Ms Praisya Ann Jacob and Ms Hanisha Shah, and one M Pharm student, Ms Krishna Geetika.
4. Ms Judit Jaison, Post Graduate student in Department of Anatomy, Kasturba Medical College was awarded 3rd prize for the paper titled "Variation in the origin of phrenic nerve & its clinical significance" presented at the International Symposium on Head & Neck tumours – Translation from Cancer Biology to Cancer Medicine: organized by Dept. of Oral Pathology & Microbiology, Manipal College of Dental Sciences, Manipal on October 3 and 4, 2015.
5. Ms Sandhya Kumari, Department of Clinical Embryology, received Travel award from Indian Council of Medical Research (ICMR) to attend 18th World IVF Congress of In Vitro Fertilization 2015, held at Copenhagen, Denmark during September 27 – 29, 2015.

C. Events in Manipal University

1. The Fifth Annual Nobel Update was jointly organized by Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences and Department of Virus Research, Manipal University on August



29, 2015. Apart from the regular sessions on Nobel Prizes in Physics, Chemistry and Physiology & Medicine, a special feature on Mr Kailash Satyarthi (Nobel Peace Prize Laureate) by Dr Ida Dsouza (Faculty, Department of Public Health, Manipal University) was the highlight of this year's event. This venture is primarily intended to impart a multidisciplinary perspective to the divergent curricular themes of Manipal University. The organizers also announced a prize (a travel grant) to those who would successfully predict the Nobel Prize in Physiology and Medicine 2015.

"All the talks are highly informative and motivating. Such programmes are the need of the hour for inspiring young generation. I am very happy to be a part of this program" said Ms Meenakshi Sreenivas, PharmD student who participated in the event.

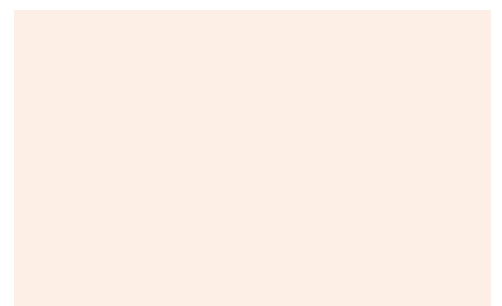
2. On September 16, 2015 Prof H S Ballal, Pro Chancellor, Manipal University, inaugurated a new lab for Nanoscience Research program at Department of Atomic and Molecular Physics, Manipal University, which is financially supported by the Department of Science and Technology (DST) and Manipal University through DST-FIST program. While inaugurating the facilities, Prof Ballal said "the infrastructure established is impressive and truly world class. The research should focus on addressing the problems relevant to the humanity". He congratulated the team on excellent research outcomes in many areas including the early detection of various kinds of cancers.

In a parallel event, Prof H Vinod Bhat, Vice Chancellor, Manipal University inaugurated the Photonics and Biophotonics laboratories of the department. While addressing the students and faculty members of the department, Prof Bhat emphasized about popularizing the research finding and the importance of taking the fundamental research to cost-effective devices. He also talked about the importance



of developing research culture at the graduate/postgraduate level. He encouraged students to take up research problems in the first semester of their course work and suggested to publish their research in quality journals. Prof Santhosh Chidangil, Head of Department, Department of Atomic and Molecular Physics, Manipal University said that the newly established labs will give a new dimension to research activities of the department and with the existing knowledge, the department will focus on translational research towards developing cost-effective therapies.

“The thrust areas of Nanosciences labs will be on the development of novel nanoparticles for nanobiophotonics imaging, fabrication of hierarchical micro/nanostructures for various applications, tailoring of surface properties, photo-catalysis and microfluidic channels etc.” said Dr Sajjan D George, Associate Professor, Department of Atomic and Molecular Physics, Manipal University.



Part II

Featured Scientist of Manipal University

*Dr Ramesh R Bhonde, Professor,
School of Regenerative Medicine,
Manipal University, Bangalore*



Dr Ramesh Ramchandra Bhonde is the recipient of Dr TMA Pai Endowment Chair for two consecutive years. He is highly appreciative of Manipal University to allot research funds to deserving scientists and allowing them to work in their core research area. His first grant successfully fetched three modest publications for the proposal titled “Islet engineering and banking”. Dr Bhonde demonstrated that islets could be cryopreserved for a longer period at low and ultra- low temperatures by addition of small molecules without losing their viability and functionality. He could initiate animal experiments to work on the role of human adipose tissue mesenchymal stem cells in insulin resistance in type 2 diabetes induced by high fat diet in the second year of his grant term. The results are highly encouraging. The data obtained so far, indicate beneficial effects of stem cell injection on type 2 diabetes making them normo-glycemic by decreasing their insulin resistance.

He was fascinated by the fact that mammalian pancreas can regenerate after partial pancreatic resection. Applying this technique to diabetic mice showed that partial pancreatectomy in experimental diabetic mice can lead to reversal of diabetes and restoration of normal blood glucose. Being a zoologist and a developmental biologist by training, Dr Ramesh was interested in finding out milestones in development of pancreas. Taking clue from the literature about the transcription factors involved in pancreatic development he applied this knowledge to generate islets of Langerhans from mesenchymal stem cells derived from human adipose tissue, bone marrow, cord and dental pulp. He

succeeded in obtaining islet like aggregates from these stem cells which could reverse experimental diabetes in mice upon transplantation. The results were published in top notch journals- STEM CELLS, CYTOTHERAPY etc. Due to receipt of Dr TMA Pai chair grant he could compare gene profiling of man-made islets (Stem cell generated) with GOD made islets (isolated from the pancreas).This work was published recently in GENOMICS.

He has delivered several guest lectures at many colleges in Bangalore as well as other cities on Stem cells & Regenerative Medicine. Dr Bhonde was instrumental in organizing Symposia and Seminars on Stem cells at School of Regenerative Medicine [SORM]. His team conducted hands-on training for various medical and paramedical personnel related to stem cell area. The most exciting was the co-teaching program initiated by MU between Colombo University and SORM, Manipal University for MSc in Regenerative Medicine. This also facilitated visit of SORM faculty to Sri Lanka for teaching courses and examination.

"In terms of patents we did not contribute much however we published a large number of papers in International journals of high repute such as Science Report (Nature), J Cell. Physiology Cytotherapy, Cell Metabolism, Arch. Toxicology etc. I strongly believe in publications as these are our visible proof of scientific contribution.

'Publish or Perish' should be the motto of all budding scientists. This is in line with 'Adapt or Perish' – a rule of Biological Evolution. Publications can give you name and fame. One gets recognized in the scientific environment only through publications and patents. The key to success in publications is NOC meaning Novelty, Originality and Creativity. Moreover, I strongly believe in speed of work and timely publication especially when one is working in a competitive area of research", opines Dr Bhonde.



His future plans include:

- 1] To impart state of art education in basics and applications of stem cells in human health and disease
- 2] To emphasize the importance of stem cells in human illness and wellness
- 3] To find out novel strategies of inducing pancreatic regeneration in diabetics for possible reversal diabetic state and improve upon the quality of life in diabetic patients
- 4] To promote human stem cells as a platform for drug screening reducing animal experimentation

Part III

Manipal University Students' Research Forum (MUSRF)

International Conference on Healthcare and Technical Research, December 2015

Manipal University Students' Research Forum (MUSRF) under the aegis of Research Directorate of Manipal University is organizing the 'First International Conference on Healthcare and Technical Research (ICHTR)' at Manipal University, Manipal, India during December 22-24, 2015. The conference will showcase innovative healthcare and technical programs to improve the quality and enhance the learning of researchers from multidisciplinary domains - healthcare, medical, paramedical, pharmaceutical, engineering, basic sciences, management and related areas. ICHTR is built on a strong scientific program with renowned speakers stimulating scientific exchange. The conference aims to provide a common ground for researchers from multidisciplinary domains to share their novel ideas, innovations and experiences. In addition, the conference will provide opportunities to network with healthcare/technical professionals and peers. The participants will benefit from the strongly designed interdisciplinary scientific program. For more information, please visit the webpage at <http://manipal.edu/content/dam/manipal/mu/Research/musrf/International%20Conferance.pdf>



Editorial Team

1. Dr N Udupa, Director Research (Health Sciences),
Manipal University, Manipal
2. Dr Raghuvir Pai, Director Research (Technical),
Manipal University, Manipal
3. Dr Satish Shenoy, Director Research (Technical),
Manipal University, Manipal (July 28, 2015 onwards)
4. Dr Manthan Janodia, Associate Professor,
Manipal College of Pharmaceutical Sciences, Manipal
5. Dr Rekha Shenoy, Associate Professor,
Manipal College of Pharmaceutical Sciences, Manipal