2015, Vol 3; Issue 1 Sree Chitra Tirunal Institute for Medical Sciences & Technology

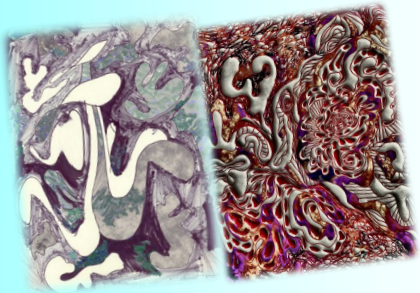
# Chitra Dhwani

*Quarterly e-magazine of SCTIMST, Trivandrum, Kerala, INDIA*



## 2nd ANNIVERSARY

## 2015, VOL 3, ISSUE 1




T.K. Lakshmanan

(1921 - 2015)

**www.sctimst.ac.in**

# Contents



*"Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible."*

# From Editor....

**A Letter from the Editor**

Dear All,

I am truly delighted to present the 1st Issue of 2015 of our ezine "**Chitra Dhwani**", that marks completion of two years. I would like to express my heartfelt gratitude to each and every member of the Chitra family for their kind support and generous co-operation in this magnificent endeavor. I am sure that arduous work of our dedicated editorial team bestowed the quality content with fresh innovative flavors in every upcoming issue.

It is a privilege and honor to have the special message from our beloved President, SCTIMST in this issue of Chitra Dhwani. The messages from our Director and the Head (BMT wing) are truly encouraging. The special feature on BIOCERAMICS will provide an excellent insight into the several products developed and commercialized by SCTIMST. A day at Precision Fabrication Facility describes how designs for medical devices are given shape in our unique Tool-Room.

The new products from Chitra are always our prized possessions. Memory lanes is truly interesting piece of write-up by Er Balram giving vivid example of language breaking the barriers. We are happy to resume our Alumni Column. It is truly remarkable and exciting journey by Dr PA Suresh that will definitely spark passion in our residents and PGs, a true real life masterpiece!

This very quarter of the year was full of Scientific and Social deliberations. Institute Day witnessed Gala celebrations commencing with WALKATHONE, a special awareness move for Healthy Hearts. Science Fete inaugurated by Dr Suresh Das, Executive Vice-President, KSCSTE was the heartline. The evening marked rich cultural flavors by staff. The Institute stood in solidarity with the National Games 2015 and sprinted for Run Kerala Run!

We have showcased exemplary piece of artwork, artistic thoughtful sketches by a Scientific Luminary, the DST Secretary, which is one of the remarkable attraction of this issue. We have tried to pay tribute to the legendry cartoonist, RK Laxman revisiting some of his science cartoons.

We welcome suggestions from you about this endeavor, and continue to look forward to your co-operation and support.

Thanks and best regards

**Kamalesh K Gulia**
Editor
Scientist & In-charge
Sleep Disorders Research Lab
BMT Wing, SCTIMST

# Presidential message

**Shri KM Chandrasekhar**
**President, Institute Body, SCTIMST**

*I am pleased to share my thoughts after almost a year at SCTIMST. The 2nd anniversary of the Chitra Dhwani provides an exceptional opportunity to reflect on events that have made our Institute a Centre for Excellence. At the same time, we are taking more steps to further promote our institution as an important centre for the development of science and technology.*

*I am delighted to see the dynamic participation of academic faculty, scientists, nurses, technicians, all staff members and students in the day to day activities and functioning of the Institute.*

*I am happy to note that the Institute won the 5th National Award for Technology Innovation in the stream of Polymers in Health Care. This was jointly awarded to SCTIMST and industry partner HLL Lifecare for developing and commercializing an Intrauterine System with Controlled Drug Delivery in a function held at Bangalore on 21st February 2015.*

*Development of medical devices can play an important role in our Government's Make in India initiative. Our Institute has recognition as one of the best Institutes in this area. We have taken important initiatives last year to initiate a Technology Incubator cell. This business incubator would galvanize the youth to generate new ideas on medical devices and provide them a platform to take their concepts forward to the commercial stage.*

*The expansion of the BMT campus facilities has been achieved with completion of New Engineering block. It is also heartening that ChitraDhwani has become the voice of SCTIMST and an active forum for showcasing events, and displaying the talents of our staff members, echoing our past and uniting alumni for further progress.*

*I congratulate the editorial team of Chitra Dhwani for doing a commendable job.*

***"Setting goals is the first step in turning the invisible into the visible."***

# New Directions...

**Dr JaganMohan Tharakan**
**Director, SCTIMST**
**Professor, Cardiology**

**New Ventures: Technology Incubation Center for Medical Devices & Biomedical Materials**

It is indeed encouraging to see Chitra Dhwani evolve as an informative and entertaining e-magazine in a very short span of time. I wish to congratulate the Editorial Staff for the excellent work in bringing out this edition of Chitra Dhwani. The pictorial representation of important Institute events in the e-magazine is well appreciated.

The Institute plans to venture into newer areas for biomedical technology development and patient care services. Sree Chitra Tirunal Institute for Medical Sciences and Technology - Technology Incubation Center for Medical Devices and Biomedical materials has been initiated as a society to provide the appropriate ecosystem with modern infrastructure facilities to encourage young entrepreneurs and start ups with ideas in the field of biomedical technology, so that they can pursue their ideas and leads to commercial products. The Institute will be a nodal center for biomedical research under the Technical Research Centre initiative of Government of India and the Department of Science and Technology has already earmarked some funds for the Center. In patient care area, the Institute plans to start the pediatric neurology program which will specifically address the issues related to neurological disorders in pediatric age group.

I am convinced the next 5 years will see major advancements and achievements in the Institute and I am confident as a team we will all rise to the occasion with renewed vigor, commitment and hard work to attain the set goals.

I wish Chitra Dhwani all success in depicting the pulse of the Institute and its staff.

# Notions:TRC at BMT wing

**Er OS Neelakantan Nair**
**Ag Head, BMT wing**
**Er-G (Sr Grade)**

**Technology Research Centre at BMT wing, SCTIMST A Nodal Centre in India for Technology Development**

The Biomedical Technology wing of the SCTIMST is a specialized research venture dedicated for the technology development of industrial significance and health research studies of social relevance. The status of *"An Institute of National Importance under the Department of Science & Technology (by an Act of Parliament in 1980)",* was acclaimed by SCTIMST being pioneer in area of medical device making. At the time when the country is looking into direction of "Make in India", SCTIMST once again received the special recognition of being the front-runner position by the Government of India last year. The SCTIMST is identified as one of the Nodal Centre for the Technology Development in our country. The BMT wing is heading for the **Technology Research Centre** with generous financial support from the Department of Science & Technology.

I am sure this new facility will be a milestone in the history of the Institute. With the able guidance of the Hon'ble President of the Institute and the Director of the Institute, and the support and assistance of the faculty, technical staff, students and administrative staff of BMT Wing, I am confident that we will be able to produce wholesome results and the society will be greatly benefited by this specialized centre.

As urged by the Hon'ble Minister for Science and Technology, it is necessary for us to embark on some major science projects which have relevance to national needs and which will also be relevant for tomorrow's technology. It is a proud moment for the SCTIMST that the above Centre has been sanctioned to us which is in line with policy of government.

***"Optimism is the faith that leads to achievement. Nothing can be done without hope & confidence"***

Special Feature

# BIOCERAMIC PRODUCTS for BONE SUBSTITUTION...

## Chronicle on Bioceramics Lab Realizing Concepts into Products....

The Bioceramics Lab was established in the Biomedical Technology (BMT) Wing in 1993 by the initiative of Dr R Sivakumar, the former -Head of the BMT Wing, when Dr MS Valiathan was the Director of SCTIMST. The objective for having a dedicated lab was to conduct indigenous research and development of synthetic bone graft products and their commercialization. At that time, synthetic bone graft products for orthopedics and dentistry were almost fully imported and bone grafting was an expensive procedure. The Bioceramics Lab served as a pioneering center in India to develop and validate synthetic bone graft materials. The activities flourished when Dr GS Bhuvaneshwar took the charge of Head of the BMT Wing and Dr K Mohandas became the Director.

### DEVELOPMENTAL (R&D) ACTIVITIES

Synthetic bone grafts are mainly made out of inorganic chemical compounds based on calcium phosphates and silicates, which are '*osteoconductive*' (ie the ability to integrate with biological tissues). The basic ingredients are processed through ceramic routes to form solid porous structures. When implanted in bony defects, they will integrate with the host tissue, resorb eventually and help in the natural healing of the defective bone. To improve the functionality of these products, polymers are used as a matrix to form composites with osteoconductive properties.

The initial step in product making is the characterization of ingredient materials to see phase purity, composition and morphology. The tests and analyses are done in calibrated equipment, following validated procedures as per international standards. After ensuring the required physico-chemical and functional properties, they are subjected to biological safety evaluation based on ISO 10993 standard. Satisfactory outcome in the safety (toxicological) evaluation will qualify the material/product for animal studies (pre-clinical bone implantation), which is followed by human clinical trials. After proving the safety and efficacy in human subjects, the know-how of manufacturing the product are transferred to the industry.

The lab has developed expertise in synthesizing basic ingredients for osteoconductive bioceramic materials and converting them to clinically useful products. The developmental activities are supported by the various labs in the BMT Wing Campus and collaborating medical professionals. The team in the bioceramics Lab had designed a series of products based on calcium phosphate ceramics, bioactive glass compositions, bioactive cements and polymer-ceramic composites. The knowledge accrued during the research and development activities resulted in several process patents. The know-how developed in the lab realised technology transfer to 4 companies to bring out a series of 12 products in the market.

### CONTRIBUTION TO SYNTHETIC BONE GRAFT PRODUCTS

The lab has developed the technology of synthesizing hydroxyapatite bioceramics indigenously in India. The corresponding know-how of chemical precipitation and ceramic processing are patented. The range of products covers free-flowing powders (in the size range of few microns), granules with interconnecting porosity (graded in size ranges from 300 microns to 5 mm), dense sintered rods and porous blocks.

*Bioceramic products manufactured in different shapes and sizes*

# BIOCERAMIC PRODUCTS for BONE SUBSTITUTION...

All these are validated for safety and clinical efficacy. The technology has been transferred to the industry. Two grades of granules, one for periodontal grafting and the other for orthopedic filling, are marketed in the trade names ***Periobone-G and Orthogran***, respectively by M/s Dynamic Orthopaedics Pvt Ltd, (Aluva, Kerala). Another series of products consisting of large hydroxyapatite granules and porous blocks/rods of hydroxyapatite, are marketed by M/s. Basic Health Care Pvt Ltd (Manimajra, Chandigadh), in the in the trade name ***B-OstIN***. Similar set of products are brought-out in the brand name ***Biograft*** by M/s IFGL Bioceramics, Calcutta (picture given below).

Also, the know-how for making Tricalcium Phosphate (***β-TCP***) is developed. Techniques of microstructure control and novel processing methods are being explored in the lab to make exotic materials like *transparent hydroxyapatite*.

The lab has also explored the new class of glassy materials which contain silica and show enhanced bioactivity. It culminated into the invention of a novel ***triphasic bioactive ceramic composite*** ($SiO_2$-CaO-$P_2O_5$ glass), synthesized through a non-conventional processing method involving sol-gel chemistry. The fine granules of this material (less than 1 mm size) are found useful for periodontal grafting and the technology has been transferred to M/s Dorthom Medidents Pvt Ltd, Coimbatore to make the brand "***Grabio Glascera***". Using the same know-how, M/s IFGL Bioceramics, Calcutta, also started making **Biograft-HABG series** products.

The team has worked on calcium phosphate cements, which are the third generation of synthetic bone graft. These are aqueous based cements containing calcium phosphate compounds, which set into hydroxyapatite mass. Formulations are modified so as to obtain fully injectable, solidifying pastes. The bone implantation tests in rabbits and efficacy studies in periodontal osseous grafting showed the material is far more efficacious than hydroxyapatite granules. M/s IFGL Bioceramics, Calcutta, has taken the technology of calcium phosphate cement in the product name ***Biograft-CPC***.

**Bioceramics Products marketed in various brand names by different Companies.**

# BIOCERAMIC PRODUCTS for BONE SUBSTITUTION...

Another initiative from the lab is the setting up of pulsed laser deposition system (semi-industrial) for making bioactive ceramic coating on titanium implants. The adherent coating of bioactive material provides an osteoconductive surface to implants, which is inherently bioinert. In ***pulsed laser deposition*** **technique**, a dense target (hydroxyapatite or bioactive glass) is subjected to ablation using an intense laser beam (Nd:YAG source at 355nm) and the material is collected over heated implant surface (~400ºC) loaded on rotating planetary holder. The set-up generated novel kind of bioceramic-titanium oxide dual layer over titanium implants, which has nano-porous structure suitable for drug loading.

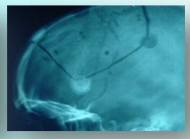
**OTHER AREAS OF RESEARCH INTEREST**

The lab is also engaged in basic research and training in bioceramics eg *Biomimetic Processing*, which deals with the deposition of bioactive calcium phosphate materials over substrates from solutions mimicking biological conditions.

**BILAYER CERAMIC BUTTONS for CRANIAL BURR-HOLE CLOSURE**

*Burr-holes are made on the cranium during brain surgery. This will result in puckered scars while healing, if not properly closed. Special mushroom-shaped ceramic buttons (hydroxyapatite) are designed having two layers of different porosities to match the host bone. These buttons have been successfully tested in patients for better healing without scars and the know-how is now commercialized.*

Bilayer ceramic buttons

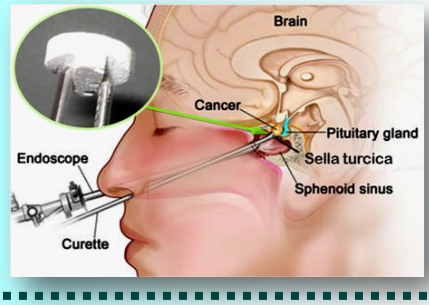


Scan after closure of burr-holes

Healing with no cosmetic deformity

**CERAMIC BUTTONS for SELLA TURCICA CLOSURE**

*In trans-sphenoidal surgery to remove tumors of the pitutary gland, hole has to be made on sella turcica for access. The closure of this hole is very crucial, for which there are no conventional ways. Special ceramic button (hydroxyapatite) are designed for the purpose.*




It has the advantage of providing natural hierarchical structural constructs (such as bone, shells and diatoms) by creating the microenvironment and could be grown over biopolymer substrates such as cotton, chitin and chitosan. They possess better biological properties and find application in drug delivery.

Superparamagnetic spinel ferrite nanoparticles have gained attention in biomedical field during the past decade because of the scope in applications such as hyperthermia, site specific cell delivery, MRI contrast enhancement and controlled drug delivery. The particles should have good biocompatibility, saturation magnetization and uniform size distributions lesser than 100 nm. Recently the lab has developed a series of super-paramagnetic iron oxide nanoparticles via chemical synthesis route. They showed excellent hyperthermia characteristics as well as MRI contrast. A novel magnetic microsphere was designed and tested for cell separation, manipulation and delivery.

The In-charge of the Lab, Dr HK Varma emphasizes the importance of team work for these achievements. He gratefully acknowledges the support of his lab members, particularly Mr S Vijayan and Dr S Suresh Babu. The product development was realized with the whole-hearted help from the scientists and staff in the various biological test labs of the BMT Wing Campus. This dedicated work was appended by several leading orthopaedicians, dentists and neuro-surgeons, who conducted the clinical evaluation of the products. The surgeons in SCTIMST, Dr Bhattacharya, Dr Suresh Nair, Dr HV Easwer, and other collaborators Dr Nandakumar (Trivandrum Dental College), Dr BRR Varma (Manipal), Dr KV Menon (EMC Cochin), Dr Vrisha Madhuri (CMC Vellore), Dr Manikandhan (MA Dental College, Chennai) played vital role. The Students and Faculty from Trivandrum Dental College and Amritha Institute (AIMS, Cochin), had extended valuable inputs. The team gets satisfaction when their products improve the quality of life of patients ailing from bone defects.

**TEAMWORK MADE IT POSSIBLE!**

*(This special feature is prepared with the inputs from Dr HK Varma (Sc F & SIC) & Dr Manoj Komath (Sc F) of the Bioceramics Lab, BMT wing, SCTIMST)*

# New Products..

## D-SOLV launched in market!


Dental Products Lab (DPL) announced the successful launching and commercialization of its new Product D-solv into the market by Dr Toms Laboratories. The product is developed by DPL and technology is transferred to Dr Toms Labs. The product is a dental caries removal agent. Dr V Kalyana Krishnan expressed his gratitude and thanked all the staff for their cooperation and help they extended during the course of this work and during technology transfer. In the list of launched and commercialized products from the DPL, addition of D-SOLV makes it the 11th product.


***"Innovation is the specific instrument of entrepreneurship. The act that endows resources with a new capacity to create wealth."***

# New Faces..

**Mr Subhash NN** has joined as Chitra High Value Fellow C (Scientist C) in the Device Testing Laboratory (DTL) with Er Muraleedharan CV. He completed BTech (Mechanical Engineering) from Kerala Univ (3rd Rank) in 2010 & MTech from IIT Madras in 2012. He has worked in the Technology Advancement team in EATON Corporation (USA based R&D firm), EIEC Pune. His research interests are structural mechanics, finite element analysis, structural health monitoring and Ultrasonic NDE. Subhash would be performing Finite Element Simulations, Risk assessment and Reliability analysis for bio-mechanical implants like mechanical heart valve etc at SCTIMST.

**Mr DEEH DEFO Patrick Brice**, PhD scholar from University of Dschang, Cameroon is awarded Research Training Fellowship for Developing Country Scientists (RTF-DCS) for 2014-2015 to work in SCTIMST for six months under guidance of Dr Kamalesh K Gulia (Scientist & SIC, Sleep Disorders Research Lab, BMT wing). The RTF-DCS fellowship is given by the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre).

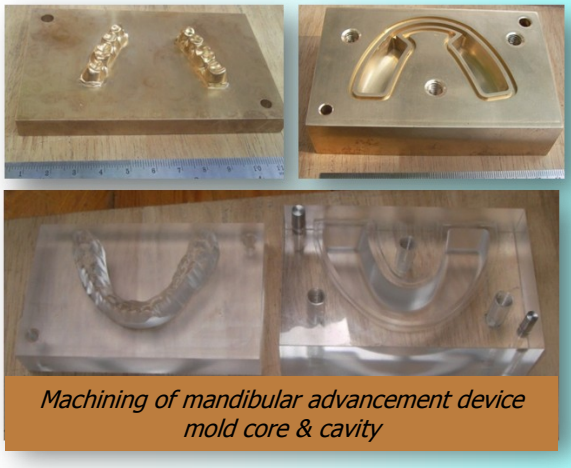
## Welcome to SCTIMST!

# A Day at the Precision Fabrication Facility..

Precision Fabrication Facility (PFF) at the Biomedical Technology wing campus is the backbone in the device fabrication. The Facility was initiated under the able leadership of Er Neelakantan Nair about three and a half decades ago with conventional Lathe Machine, Milling Machine, Drilling, Engraving etc to provide in-house technical service support in making dies, molds, Jigs & fixture, pilot production and prototype component machining works for various device making projects. Later on the PFF Division was augmented with CNC Lathe, CNC Milling machine, EDM Die sinking machine, Wire EDM, Profile Projector, Tool maker's Microscope and 2D Height Gauge (a few machines are shown in pictures below). Now, it is a perfect high-tech tool-room cum precision fabricating unit.

This facility is manned by the Mechanical Engineer and machinists who reads the nuts & bolts of the structural intricacies of the design to be fabricated. On an average about 85-90 work orders per annum of different types are executed in this facility. The very first service support was provided for the Heart Valve (the most famous product from SCTIMST) by making prototype. This was followed by several products including Oxygenator, Hydrocephalous shunt, Blood bag, Needle electrode etc in the long list.

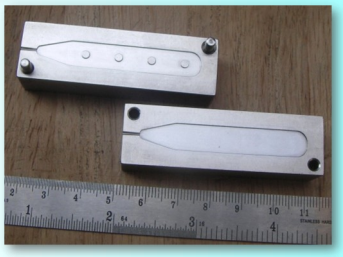
**Some of the Products Fabricated in the PFF**



*Machining of mandibular advancement device mold core & cavity*


*Die-sinking Machine for mold making (EDM)*

*Wire-cut Electrical Discharge Machine (Wire-EDM)*



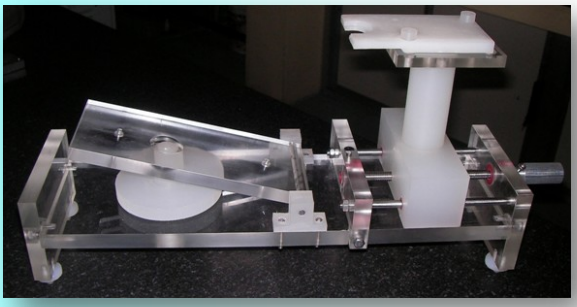
*SS Mold for subdural electrode*

*SS Mold*
*For casting Polymer samples*

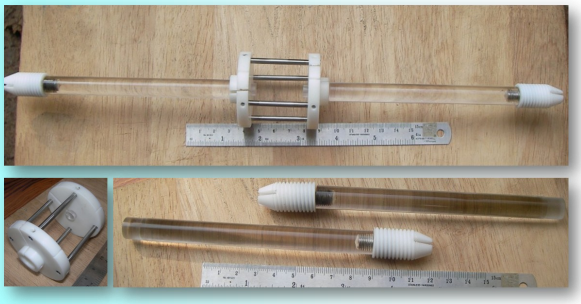
*General Purpose Conventional Machines*

*Mold for casting a coupler*

# A Day at the PFF..



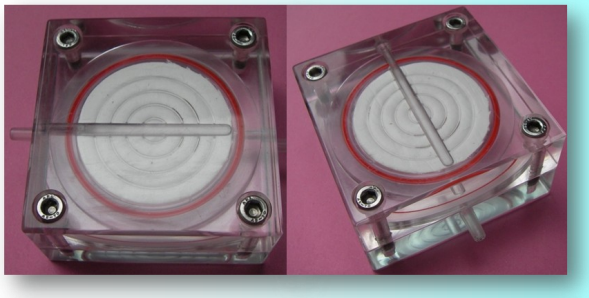
*Fixture for measuring Heart Valve opening angle*

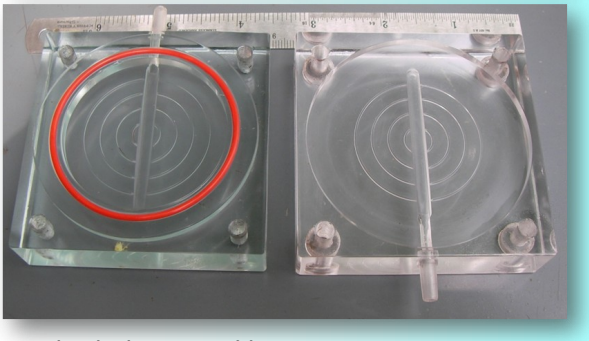


*Fixture for stent coating*

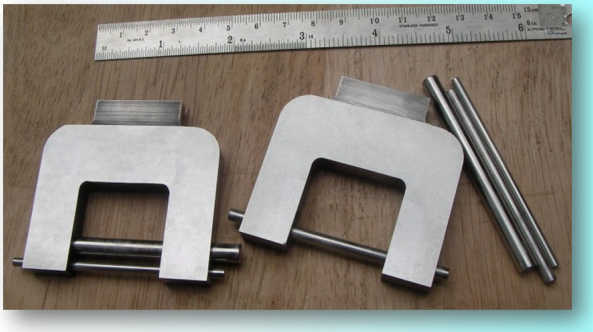
*Blood pump components in assembly*

*Er Ramesh Babu V (Engineer 'F' & Scientist In-charge of the PFF) with his team*





*Blood Filter assembly (to study leukocyte assembly)*

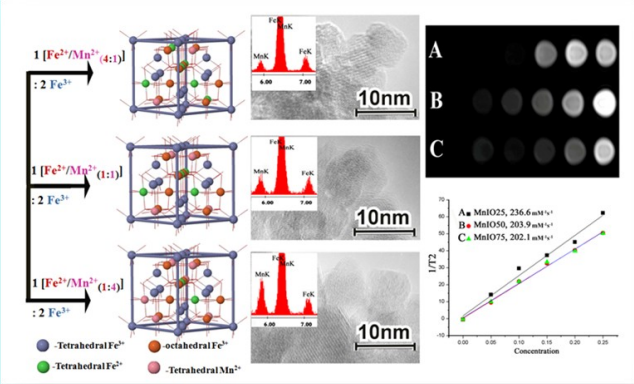


*V Graft sample holding fixture for tensile testing*

# Research Highlights....

**Magnetic nanoparticles for contrast enhancement in MR imaging!**

Magnetic resonance imaging is one of the most efficient molecular level 3D imaging technique to visualize biological process within the living system. In order to improve the visualization or make good contrast effect in images, various inorganic nanoparticles has been used. The superparamagnetic iron oxide particles [SPIONs] are getting importance as better contrast agent in MRI against conventional heavy element based ones. Further to improve the contrast efficacy and magnetic properties, various structural modifications have been carried out in the spinel form of SPION. The present paper highlights the development of an easily aqueous dispersible manganese substituted iron oxide nanoparticles [MnIO] containing approximately four times higher contrast efficiency than bare iron oxide particles. The particles revealed excellent blood compatibility characteristics, cytocompatibility and cellular internalization properties.




**REF:** *Beeran AE, Nazeer SS, Fernandez FB, Muvvala KS, Wunderlich W, Anil S, Vellappally S, Rao R, John A, JayasreeRS, Varma HK. An aqueous method for the controlled manganese ($Mn^{2+}$) substitution in superparamagnetic iron oxide nanoparticle for contrast enhancement in MRI;* ***Physical Chemistry Chemical Physics*** *2015;17:4609-19*

**Changing maternal mortality in rural India!**

The epidemiological profile of maternal deaths in most low income countries indicate that they are clustered around delivery and the immediate post partum period, due to direct causes such as haemorrhage, hypertensive disorders and infections. Promotion of institutional deliveries as a strategy in these countries including the conditional cash transfer schemes in India has been guided by this epidemiological pattern. Prospective community based data of every pregnancy and its outcomes from 2002 to 2011 in Jagadhia block - a rural, tribal area of Gujarat, collected by a voluntary organisation, SEWA Rural was analysed to study the changes in the epidemiology of maternal deaths. Detailed information of a total of 32893 registered pregnancies, 29817 live births and 80 maternal deaths (using standard verbal autopsy tool) were recorded during the study period.

The results of the analysis showed marked decrease in the maternal mortality ratio in the region (from 607 in 2002 to 161 in 2011) with an annual reduction of 17 percent. The reduction might have occurred due to community based interventions and improved skilled birth attendance through promotion of institutional deliveries. The most significant reduction occurred in maternal deaths due to direct causes during intrapartum and post partum periods while those due to indirect causes at hospital and during antepartum period was not significant. A large proportion of maternal deaths occurred during antepartum period and was due to unsafe abortion. The study clearly revealed a conspicuous change in the epidemiological profile of maternal deaths in this region. About eighty-four per cent of the deaths occurred during antepartum and were due to indirect causes; the most common causes being sickle cell anaemia, severe anaemia, malaria and ectopic pregnancy.

The scope of these findings extend to current and future safe mother interventions:

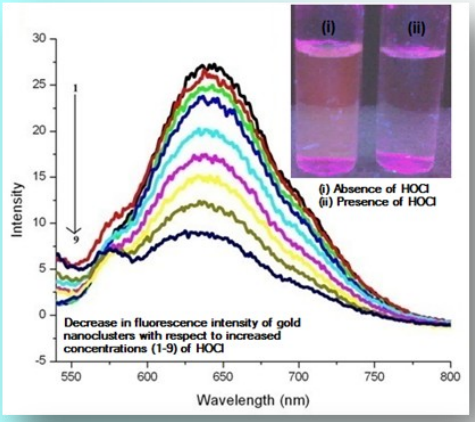
- the need to pursue with the existing efforts to promote institutional deliveries along with community based interventions to prevent unwanted pregnancies and unsafe abortions
- an urgent focus to prioritise management of indirect causes of maternal mortality during pregnancy for further reduction in maternal deaths to enable India to achieve its MDG-5 targets

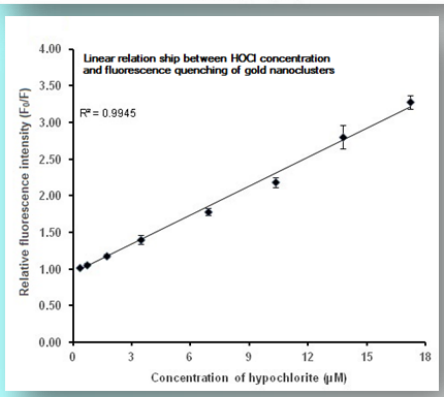
**Ref:** *Shah, P., Shah, S., Kutty, R. and Modi, D. Changing epidemiology of maternal mortality in rural India: time to reset strategies for MDG-5.* ***Trop Med Int Health,*** *2014; 19(5): 568-575.*

# Research Highlights....

**Fluorescent nanoprobe for hypochlorite detection in drinking water!**

Hypochlorite (HOCl) is the widely used disinfectant for water treatment and the residual HOCl levels more than 4 mg/L in drinking water can be harmful to health (WHO/ USEPA). In Laboratory for Polymer Analysis, a fluorescence 'turn-off' detection technique was developed for HOCl based on bovine serum albumin (BSA) stabilized gold nanoclusters. The bright red fluorescence of gold nanoclusters is quenched by HOCl due to selective oxidation of amino acid residues in BSA that could be seen by naked eye as a color change within 2 min under UV lamp. The current method is rapid and simple with a detection limit of 0.1 x $10^{-6}$ M (0.00744 mg/ L) which is very low compared to the permissible limits (0.2-1.0 mg/L-Ref: Drinking water-specification, Indian standard- IS 10500, 2012, BIS, New Delhi, India) indicating high sensitivity. The method was applied to detect HOCl in real tap water samples and showed high selectivity over other common ions present.




**Ref:** *Gopu CL, Shanti Krishna A, Sreenivasan K. Fluorimetric detection of hypochlorite using albumin stabilized gold nanoclusters,* ***Sensors and Actuators B: Chemical****, 209, 2015, 798-802.*

**Maternal sleep loss during pregnancy is a risk factor for emotional development in the offspring!**

Latest reports from Sleep Disorders Research Lab of SCTIMST showed that neuropsychological development in the offspring is disturbed by sleep restriction during pregnancy[1,2].

Female rats were sleep-deprived for 5 hours during the day, during the last trimester of pregnancy, and their pups were tested for emotional development. The newborns displayed increased crying (measured through ultrasonic vocalizations) during the initial post-natal days, when tested in an isolation paradigm[1]. During peri -adolescence they showed hyperactivity and increased risk taking behavior in the elevated plus maze[1,2]. These studies conducted on the rats showed that sleep loss during pregnancy is a risk factor for psychological disorders in the offspring.

**Ref:**


1 *Gulia KK, Patel N, Kumar VM. Increased ultrasonic vocalizations and risk-taking in rat pups of sleep-deprived dams.* ***Physiol Behav*** *2015;139:59-66.*

2. *Radhakrishnan A, Aswathy BS, Kumar VM, Gulia KK. Sleep deprivation during late pregnancy produces hyperactivity and increased risk-taking behavior in offspring.* ***Brain Res*** *2015; 596:88-98.*


***"We are at our very best, and we are happiest, when we are fully engaged in work we enjoy on the journey toward the goal we've established for ourselves. It gives meaning to our time off and comfort to our sleep. It makes everything else in life so wonderful, so worthwhile."***

***All the previous issues of the Chitra Dhwani can be viewed at the following link:***

**http://www.sctimst.ac.in/About SCTIMST/Chitra Dhwani/**

# Memory Lanes....

**Scientific expeditions enroute cultural enrichment: *Lingua franca!***

A little more than 20 years ago, when I joined this Institute, little did I realize that this Institute will become my temple of learning and laboratory of wisdom for a major part of the rest of my life. While I was young, the Institute was also definitely young and it seemed like our temperament matched well. Those were indeed the good old days!!

While the journey so far has gifted me with several memorable experiences, in this piece of memory lane, I will restrict to my experiences with different "languages" that got intertwined with life and work.

One of the initial challenges that I faced on joining the Institute was deciphering the language that was spoken at the BMT Wing campus. It was certainly English, but the overdose of biomaterials science in anything and everything (which you don't normally hear anywhere unless you are a student or faculty at Chitra!), put me at a great disadvantage. But thanks to the rich collection of reference books on this specialized subject at the BMT wing library, I soon not only overcame this handicap, but began to appear learned. So much so that I was even asked to participate in a national technology forecasting workshop in 1995 and contribute to prepare a Vision 2020 document on Biomaterials. This experts' meeting at CGCRI, Kolkata also earned me my first air travel, a perk reserved for senior officials those days.

Sometime in the new millennium AD 2000 (remember the Y2K scare, that helped the Indian software industry grow by leaps and bounds), I became part of the core team implementing quality system accreditation at BMT wing. As the accreditation agency was from France, the auditors French and the initial documentation was in French, it was thought that someone from the Institute must be exposed to French language. Thus I began taking early morning classes in basics of French at Alliance Française centre. My classmates included school kids, a senior police officer, a retired physician et al. Learning French was fun, simply because it was taught the fun way. I continued into pre-diploma course but the going became tough as the grammar became more intense. I practiced my newfound knowledge of French with our quality system consultant Mr. Alain Martinez and other auditors from France those days with great pride, little knowing that they could understand very little of it!

In late 2003, I landed in Tokyo city, as a Monbusho scholar. This scholarship offered by the Japanese government for 18 months duration for research also required one to learn Japanese language first! Without knowing Japanese in Japan, one would be a complete "alien". Interestingly, Japanese refer to foreigners as "Gaijin", which when translated means "Outside Person" or "Alien". The first official document that a long term visitor needs to obtain on entering Japan is known as "Alien Registration Card"!

So from French, I made a transition to learning Nihongo (Japanese language) which consists of three scripts - Hiragana, Katakana and pictorial Kanji. While Hiragana and Katakana are manageable, Kanji script was a tough nut to crack!! My Japanese sensei (master) Prof. Sukero ITO, who is now the Director of Japanese Language Center for International Students, Tokyo University of Foreign Studies handled the classes with great finesse. In the Japanese class, I made friends with students from Czechoslovakia, Mongolia, Greece, Azerbaijan, Brazil, Vietnam, Kampuchea, Argentina, Uzbekistan, Nigeria and Philippines. Apart from learning Japanese language together, we also explored the cuisine, culture, costumes and ideologies of the different nations.

# Memory Lanes....

This microcosm of the world offered immense understanding of humanity and the friendship with many of them continues to this day.

It may appear ironical that it was during my stay in Japan, I got an opportunity to showcase my proficiency in Hindi. The Tokyo University of Foreign Studies, a national university in Japan, has a fantastic library that even subscribes to Hindi newspapers. Having spent my childhood days in various parts of India, I have always been fluent with Hindi. Since laying hands on an English newspaper in Japan was as easy or difficult as getting a Hindi newspaper, I was happy to be content with reading Hindi newspapers at the library and felt proud at my nationalistic fervor.

I was once invited to take part in a Hindi talk show being aired by Japan's national public broadcasting organization, NHK Corporation and here I found several Japanese youngsters learning and practicing Hindi in Japan. Soon many of them were approaching me just to have conversations in Hindi and it turned out that while they were learning Hindi, I was improving my Japanese!

Finally, in what can be listed in Ripley's believe it or not series; I was in for a pleasant shock one day while commuting in the Tokyo metro. The Tokyo metro is usually jam packed and most people travel with headphones listening to music to avoid boredom. But can you believe that someone on a metro in Tokyo city would be listening to Malayalam movie songs? Well, it happened. I found out that this Japanese boy, who had visited Kerala before to learn Kalaripayattu, was a great fan of Malayalam songs and would listen to Malayalam songs on his mp3 player daily!

I am reminded of the touching lines of the poem titled "No men are foreign" by James Kirkup, taken in my English literature class at Pre degree course. I take the liberty to change the lines thus: No men are strange, no country foreign.... beneath all languages, a single message thrives...

Language is a powerful invention of man. Like any invention, it has the power to be constructive, soothing or otherwise. Let us take care in ensuring that we always utilize it for bringing cheer to others.

***Nandi, Dhanyawad, Thanks, Merci beaucoup, Domo arigato gozaimasu.....***

***S BALRAM***

*(Scientist/Engineer F, Technology Business Div, BMT wing)*

*Bird of Peace by Dr Manoj Komath*

## QUIZ 5

**What is microsleep?**

**Describe in simple words.**

**Word limit: 50 words only**

**Please send your entries to mailbox:**
**enewsletter@sctimst.ac.in**

***The winners (five) will be announced in next issue of Chitra Dhwani.***

# Chitra's Stars.....

**Dr Keerthi Chigurupati** (II Yr, DM Cardiothoracic and Vascular Anesthesia) has won the best paper award in 9th Annual Perioperative and Critical Care Transesophageal Echocardiography workshop held at Postgraduate Institute of Medical Education and Research, Chandigarh (Feb 27 to March 1, 2015) for the paper titled "Transesophageal Echocardiographic Evaluation Comparing The Infant versus Adult ALCAPA and advantages OF 3D TEE in adult ALCAPA". The award consists of 5000/- cash prize and a certificate.

**Ms Lakshmi V Nair** (PhD Scholar, Biophotonics & Imaging Lab, BMT Wing) was awarded the Best Presentation Award during the MRSI Annual Technical Meet held on January 30, 2015 in SCTIMST. The award was based on her presentation "Multifunctional Gold nanocluster: An insight into cancer diagnosis and treatment"

**Ms Sunitha Chandran** (SRF, TEM Lab, BMT Wing) has won the Best Paper Award for the paper titled `Bioactive strontium hydroxyapatite - reinforcing osteoporotic bones in women and beyond' authored by S Chandran, SS Babu, SJ Shenoy, HK Varma & A John in the Indo-Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System & Regenerative Medicine (Bi-TERM 2015) jointly organized by Dept of Chemistry, Anna Univ, SBAIO, STERMI & Queensland Univ of Tech, Australia, held at Chennai, India from 5-7 February, 2015.

# IABS YOUNG SCIENTIST AWARD...

**Dr B Santhosh Kumar**, PI, DST-FTSY Scientist, Department of Pathology, received **'Young Scientist'** award from Indian Academy of Biomedical Sciences (IABS) at the International Conference on Recent Advances in Research and Treatment of Human Diseases held at Hyderabad during 9-11 January, 2015.

**Congratulations! Congratulations! Congratulations! Congratulations!**

# Chitra's Stars.....

**Dr Manna Jose** (Department of Neurology) has won the second prize for paper presentation titled "Pharmacogenetic evaluation of methylene tetrahydrofolate reductase polymorphisms in teratogenicity of anti-epileptic drugs in women with epilepsy" at the Annual Conference of the Neurological Society of India-Kerala Chapter held at the Mascot Hotel, Trivandrum from Feb 28 to March 1, 2015.

**Dr Roshith Chandra** (Final year, DM Cardiothoracic and Vascular Anesthesia) has won the Second prize in free paper section at 9th Annual Perioperative and Critical Care Transesophageal Echocardiography workshop held at PGI, Chandigarh during Feb 27 to March 1, 2015.

**Ms Resmi V Nair** (JRF, ICMR Project & PhD Scholar Biophotonics & Imaging Lab, BMT Wing) has won the Best Poster Award for `Gold nanorod based Multifunctional system for in vivo cancer therapy" in the Indo-Australian Conference on Biomaterials, Tissue Eng., Drug delivery System & Regenerative Medicine jointly organized by Dept of Chemistry (Anna Univ), SBAIO, STERMI & Queensland Univ of Tech Australia, held at Chennai, India from February 5 to 7, 2015.

# Best Paper Award....

**Ms R Resmi** (Project Fellow TEM, BMT Wing) has won the best paper award in the Health Sciences Stream for the paper titled `Gelatin-hydroxypropyl methacrylate copolymers for potential antimicrobial wound dressing applications' (Resmi R and Kalliyana Krishnan V) in the recently concluded Kerala Science Congress (January 27-29) held at Alappuzha, Kerala. The work was carried out as part of her MPhil project at Dental Products Laboratory, BMT Wing. The award consists of Rs. 10000/- cash prize, a certificate and 1 lakh contingency.

**Congratulations! Congratulations! Congratulations! Congratulations!**

# Chitra's Stars.....

**Dr Joseph Samuel P**, Senior Resident Neurology has won the best paper award in Neurology in NSIKC Trivandrum 2015 held on 28 February - 01 March at Trivandrum for the paper titled "Resective surgery for drug resistant tumoral epilepsies: Seizure outcome and its predictions".

**Dr Ajay Savlania** is awarded 1st prize in poster presentation for work "Making Carotid Endarterectomy Safer - Sree Chitra Protocol" at the 4th international Vascular Conference – INDOVASC symposium 2015, held at Bangalore in February 2015.

**Dr Deepak Mathew** (Senior Resident, Department of Cardiac Anaesthesia) has won the third prize for paper presentation in 9th Annual Perioperative and Critical Care Transesophageal Echocardiography workshop held at PGI, Chandigarh during Feb 27 to March 1, 2015.

**Dr Neelam Agarwaal** (II yr, DM Cardiothoracic and Vascular Anesthesia) has won the third prize for paper presentation in 9th Annual Perioperative and Critical Care Transesophageal Echocardiography workshop held at PGI, Chandigarh (Feb 27 to March 1, 2015) for the paper titled "The role of intraoperative transesophageal echocardiography for evaluation of Wardens repair in cases of Sinus Venosus ASD". The award consists of 1000/- cash prize and a certificate.

**Dr Sidharth Viswanathan**, after successfully completing his MCh in Vascular Surgery with excellence, is selected as Registrar in Vascular Surgery Dept of Doncaster Royal Infirmary, UK for one Yr training.

**Congratulations! Congratulations! Congratulations! Congratulations!**

# Chitra's Stars...

## National Award for developing IUDs..


The 5th National Award for Technology Innovation in the stream of *Polymers in Health Care* was jointly awarded to SCTIMST and industry partner HLL Lifecare for developing and commercializing an ***Intrauterine System with Controlled Drug Delivery*** *in* a function held at Bangalore on 21 February 2015. **Dr Kalliyana Krishnan V**, Scientist G (Senior Grade), BMT Wing and Principal Investigator of the project received the award on behalf of Prof Jagan Mohan Tharakan, Director, SCTIMST along with Dr Guha, Head, R&D, HLL Lifecare from Shri Ananth Kumar, Hon Minister for Chemicals & Fertilizers, Government of India.

## Fellow of the SBAOI..

Dr **Prabha D Nair** of Sree Chitra Tirunal Institute for Medical Science & Technology, Trivandrum was awarded the Fellow of the SBAOI at Anna University, Chennai on February 2, 2015. The Award to Dr Prabha was conferred by His Excellency Dr K Rosaiah, Governor of Tamil Nadu during inauguration function of the Indo - Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System & Regenerative Medicine function at Chennai.

# Chitra's Stars...

## Dr S VASUDEV AWARD 2014..

**Dr PP Lizymol**, Scientist D, Dental Products Laboratory, BMT Wing has been conferred with the prestigious Dr S Vasudev Award for the year 2014 in the Kerala Science Congress held from January 27-29, at Alapuzha, Kerala for the project titled "Development of smart dental composites consisting of calcium containing resins and fillers" under the Science Research Scheme of KSCSTE. The award consists of Rs 50000/- cash prize and a certificate.


Kerala State Council for Science, Technology and Environment
Sasthra Bhavan, Pattom, Thiruvananthapuram

Dr. S. VASUDEV AWARD 2014

Kerala State Council for Science, Technology and Environment is pleased to confer the Dr. S. Vasudev Award for the year 2014 upon Dr. Lizymol P. P, Scientist D, Dental Products Laboratory, BMT Wing, SCTIMST, Thiruvananthapuram for the project titled "Development of smart dental composites consist of calcium containing resins and fillers" under the Science Research Scheme of KSCSTE.

Thiruvananthapuram
27.01.2015

Dr. K. K. Ramachandran
Member Secretary, KSCSTE

**Dr Thomas Titus,** Professor Senior grade & HOD, Cardiology Dept, SCTIMST, is awarded **FRCP (Glasgow).** Dr Titus is already Fellow of **FRCP (Edinburgh)** and **FACC (USA).**

### Dr S Vasudev Award

**Dr S Vasudev Award** is a prestigious award instituted by the KSCSTE in memory of Dr S Vasudev, former Chairman of Science, Technology and Environment Committee (STEC) for the best project completed under the Science Research Scheme (SRS) of KSCSTE. SRS is the flagship activity of the Council, aims towards promotion of R&D activities in the Kerala State both in fundamental and applied research. Final Technical Report (FTR) of the completed SRS projects will be processed for Dr S Vasudev Award. The FTR submitted within 6 months of the completion of the project period with publications in peer reviewed journals will only be considered for the Award. A panel of referees will evaluate the Final Technical Report and an award committee will finalize the award for the best research project and present to the Principal Investigator of the project by the Hon'ble Chief Minister of Kerala during the inaugural session of KSCSTE.

**Dr Kamalesh K Gulia** received the Award for Best Poster at the International Training Workshop on 'Herbal Medicine: Drug Discovery from Herbs - Approaches, Innovations and Applications', Mysore (Karnataka) & Ooty (Tamil Nadu), India, during 30th March- 3rd April 2015 for the work 'Pre-clinical evaluation of 'a-asarone', an active principle of Acorus calamus for management of insomnia and anxiety'. The Conference was organized by the Center for Science & Technology of the Non-Aligned and other Developing Countries (NAM S & T Centre) and JSS University, Mysore.

# Service Awards: Serving for 1, 2 & 3 decades...

**30 years of service**

**20 years of service**

**10 years of service**

**25/30 years of service**

*"There is no higher religion than human service. To work for the common good is the greatest creed."*

## May you have.....

**Enough happiness to keep you sweet, Enough trials to keep you strong..**
**Enough sorrow to keep you human, Enough hope to keep you happy..**
**Enough failure to keep you humble, Enough success to keep you eager..**
**Enough friends to give you comfort, Enough wealth to meet your needs..**
**Enough enthusiasm to look forward, Enough faith to banish depression..**
**Enough determination to make each day better than yesterday.....**

# Events held at SCTIMST....

## Republic Day Celebrations

Hospital Wing

BMT Wing

*Glimpses of the cultural event & Pictures drawn by kids in Drawing competition.*

# Events held at SCTIMST….

## National Conference: Nursing Management in Stroke..


# Events held at SCTIMST….

## Indo-Danish Symposium "Musculoskeletal Stem Cells & Tissue Regeneration"


## QUIZ 6

**What is Cadillac, the Beast?**

**Please send your entries to mailbox: enewsletter@sctimst.ac.in**

***The winners (five) will be announced in next issue of Chitra Dhwani.***

# Events held at SCTIMST….

## National Symposium on Endovascular Interventions in Acute Stroke & Workshop on Transcranial Doppler (TCD) Carotid Duplex


## CME programs conducted by Telemedicine Facility (January to March 2015)

| No | Remote Center & Speaker | Topic | Date |
|---|---|---|---|
| 1 | ISRO Ahmedabad: Dr Tiven Marwah [MD, DIS, DISC], Endocrinologist, Le Bonheur Endocrine & Diabetes Clinic, Ahmedabad | Recent Approach in Management of Type 2 Diabetes | 9/1/2015 |
| 2 | AIIMS, New Delhi: Dr GD Sathyarthee, Assoc Professor, Dept of Neuro surgery | Evaluation & Management of Cervical Spine | 12/1/2015 |
| 3 | AIIMS, New Delhi: Dr S Arulselvi, Additional Professor, Lab Medicine | Thromboelastography-an advanced POC equipment to measure haemostasis | 14/1/2015 |
| 4 | AIIMS, New Delhi: Dr Shivanand Gamangati, Additional Professor, Radio-Diagnosis | Peripheral vascular injuries imaging and intervention | 16/1/2015 |
| 5 | ISRO Ahmedabad: Dr Amol Agarwal, Consultant Interventional, Cardiologist, Sterling Hospitals, Ahmedabad | Recent Advances in Treatment of Acute Coronary Syndromes | 12/2/2015 |
| 6 | Nanomedicine based on RNA interference for tissue engineering & treatment of human disease | Recent Advances in Management of Hypertension | 12/3/2015 |

# Events held at SCTIMST...

## Live Telecast of a CME program by Telemedicine Facility

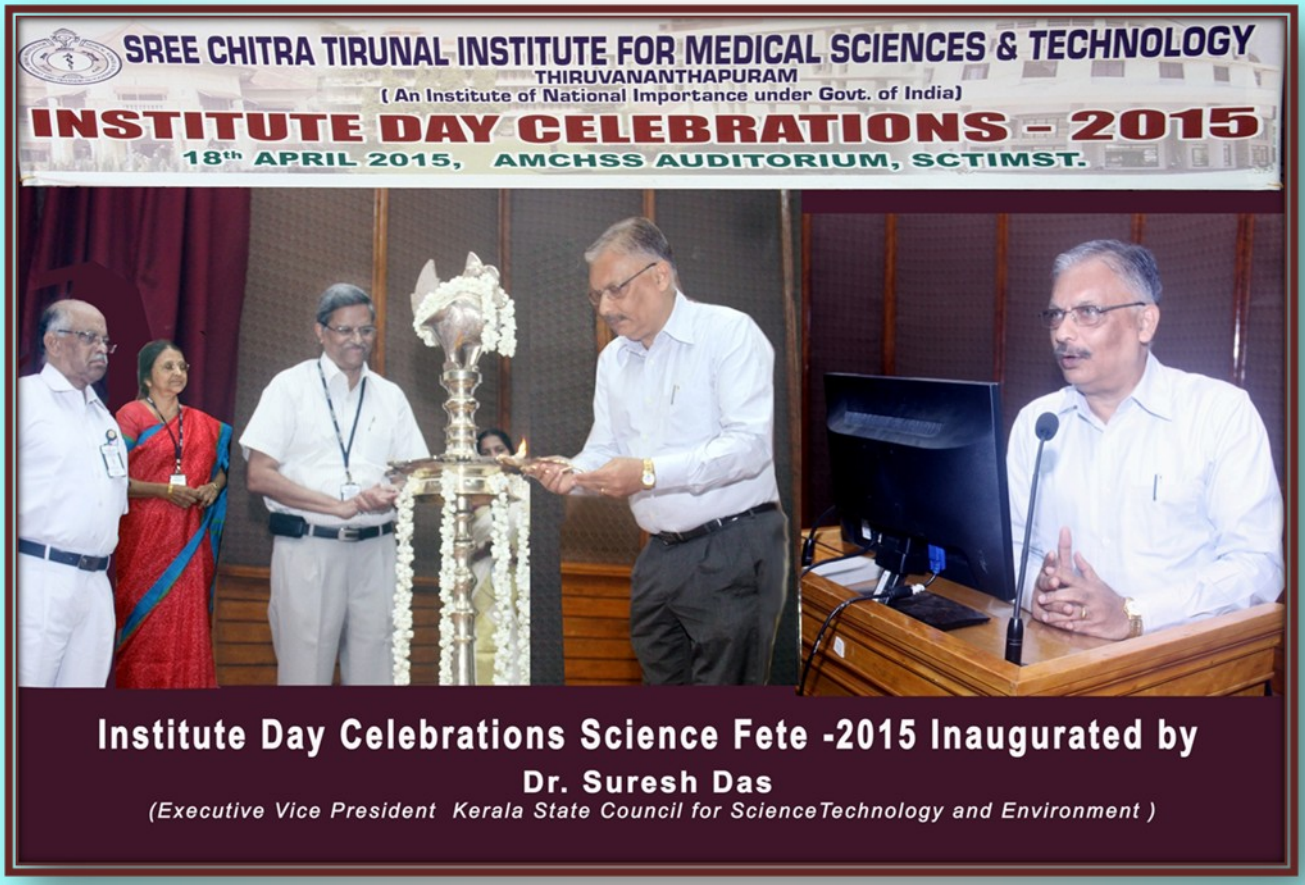

## Seminar on Safe Abortion


## SCTIMST for RUN Kerala RUN!: Solidarity with National Games!




# Events held at SCTIMST...

## Science Fete to commemorate the Institute Day Celebrations at SCTIMST







## Scientific & Cultural Feast

# Events held at SCTIMST...

## SCTIMST deliberates on National Health Policy..


## Science Day Celebrations

# WALKATHONE for Healthy Hearts!

**SCTIMST ponders unique way to celebrate Institute Day……**







# Events held at SCTIMST…. Workshops

## Best Practices in utilizing Calibration Facilities & Calibrated Equipment..


## Training in Animal Handling at Division of Laboratory Animals Sciences..

*"Crucial to science education is hands-on involvement: showing, not just telling; real experiments and field trips and not just 'virtual reality'"*

# Events held at SCTIMST….

**Awareness Programme on ISO 9000!**

An awareness programme on ISO 9000 was arranged by the Quality Cell, BMT Wing in January 2015 with majority participants from supporting departments like Administration, Stores & Purchase and Security division. Morning session was handled by an external faculty, Mr Bony Thomas from STQC who elaborated on ISO 9000 and implications of the forthcoming revision in late 2015. The inception and development of Quality systems in detail- the history of product quality assurance; a craftsman oriented approach, policeman approach, Quality Control, later inception of Statistical Quality Control and the concept of prevention of defects rather can rejection in production facilities was introduced. Importance of Quality Management System (QMS) to ensure the quality of service at every step in the organization to achieve quality of final product was also spoken of.

The term quality as defined by various "Quality Gurus" such as Dr W Edwards Deming, Dr Joseph Juran[1], and Philip Crosby[2] etc was included in the speaker's presentation. ISO 9000 definition of quality is "*the degree to which a set of inherent characteristics fulfills requirements".* An organization can go for accreditation of their QMS in order to achieve goals like motivating the staff, to meet regulatory or market requirement, or as part of risk management program. The advantage is that since ISO 9000 requires much of a documentation and gap analysis, there is better understanding of the direction and the immediate goals of the organization. There will also be increased productive internal communication among the various teams involved. For eg, if we are able to standardize the processes related to Administration, Accounts, Stores & Purchase etc there will be increased know-how as to what things are to be dealt with at what level of management and in what time frame. True, this may actually exist, but when there is improved internal relations and communications from trainings as part of implementation of QMS, internal customers (us!!) will be treated at par with external customers (vendors, suppliers etc) and will be provided the same high level of service. Also appreciation of employee's efforts and encouraging their feedback in subsequent audits will apparently improve the overall system. Implementing and maintaining a QMS will obviously will bring in much more accountability for the processes as well as increased efficiency and effectiveness at every step, which will benefit the organization in many ways like building quality into products and services for the customer, following international or state of the art practices and many others.

The second half of the training was handled by Sri Nagesh DS (Scientist G & Dy.Technical Manager) and was an open discussion on how we can implement ISO 9001 system in our Administration, Accounts, Security services and Stores & Purchase activities. The faculty as well as the attendees concluded that this will certainly improve the overall quality of the activities. With our success in implementing and maintaining the QMS platform for more than a decade in the testing laboratories, extending it to other services will be an undemanding task, with a little bit more of documentation and purpose.

*[1] Quality is "Fitness for use". This links customer requirements to quality.*

*[2] Quality is "Conformance to requirements". This may or may not represent customer requirements.*

*(Contributed by Sreekanth SL and Vinod Kumar V (Er D) , Quality Cell, BMT wing)*

# Upcoming events….


**URL: www.ispan.in**

**Email: ispantrivandrum2015@gmail.com**

On 20th December 2013, The United Nations General Assembly 68th Session proclaimed 2015 as the International Year of Light and Light-based Technologies. Highlighting the importance of light and light-material interaction, SCTIMST is organizing International Symposium on Photonics Applications & Nanomaterials during this year. This symposium will be an interdisciplinary forum for collaboration and learning among researchers, clinicians, and industrial partners in fields related to Nanosciences, biophotonics and biomaterials, and also imaging applications. This event will take place over three days, **28-30 October 2015**.

**Journey from SCTIMST to ICCONS..**
***Persistent and relentless struggle pays!***

***Dr PA Suresh, Director, Institute for Communicative & Cognitive NeuroSciences (ICCONS)***

Two remarkable quotes of Mark Twain - "*Truth is stranger than fiction"* and "*I have never let my schooling interfere with my education*" have great depth and meaning in my life with respect to my journey to the founder Director for ICCONS. I would like to state at the outset, it was never in my imagination, at any point in my child hood, half a century back, that I am going to become a Neurologist. I was born and brought up in a remote village devoid of modern amenities, conveyance, roads, electricity, and aids for communication or even to monitor time. Schools itself were far away from home requiring swift one hour walk through uneven forest roads. But those days are still quite pleasant to my memories, like getting drenched in heavy rains or sheltering myself under big tree or plantain leaves as my parents were too poor to provide us with an umbrella. Yet, they send all six of us to the school unlike our neighbors who directed their children to traditional jobs or agricultural works. Being the fifth in the family, I never got any special recognition; rather parents were too busy trying to meet both ends of life. It never occurred to me that I was good in studies nor the scoring high marks in examinations were covetable even when my teachers often admired me for that. Even though I always wanted to be a doctor, my class teacher wished that I would be a minister some day. Days passed by with its ups and down, till unknowingly, it pushed me to the doors of Medical College.

I was not an outstanding student as a medico; but had a keen interest in my subject, that made me engrossed in the world of books, a hobby from school days. I had an intense desire to know why and how people suffer from diseases, that made me to read anything and everything connected to my subject and beyond, including, the history of Medicine, evolution of treatment and investigations.

I imagined doctors could cure all diseases, and got upset on my first duty as an internee, that revealed our helplessness in front of many diseases. Soon, I understood that despite our limited knowledge on several diseases, a considerable number of patients can be alleviated from their misery or prevented from unexpected events if one is committed. Even though I had great financial difficulty, I decided to work with salary alone. My parents were source of encouragement. Immediately after my MBBS graduation, I worked in extreme remote villages in small cooperative hospitals, Primary Health Centers and a small multispecialty hospital for about 2 years that gave ample experience, and even some unforgettable moments in my career life. Along with my medical books, "*Citadel*" by AJ Cronine and "*The Final Diagnosis*" by Arthur Hailey were my companions. While pursuing MD in General Medicine, I developed a deep interests in the innate aspects of human behavior and function. I started thinking silently as I was mostly living alone, had very few friends around me; new thoughts started haunting me - life, demise, after life and human behavior, intelligence, perceptions, human ability to use language, invention and even entering into space ages. But, when I pen down these words, I am still in my infancy to answer such big questions.

I made my first visit to SCTIMST, while I was doing my PG in General Medicine for the literature survey of a publication. The calm and serene environment of SCTIMST fascinated me deep into heart - the clean corridors of a fully planned Institution, disciplined behavior of people ignited my wish to study at SCTIMST. I joined as a DM student in Neurology in 1998. We have our ardent admiration and respect for the great Director Dr MS Valiathan whose unmatched vision was behind the genesis of SCTIMST, an Institute for Technology and Medicine for the first time in India. My second great admiration was for Dr PK Mohan who was the Head of our Department, such an unassuming person for the post he held. We, students of Neurology always perceived him as a lexicon of knowledge, who, with an inborn sarcastic smile, asked simple questions, simple and basic, but difficult even for the bright students to answer. The faculty - Dr Sarada, Dr MD Nair and Dr Veerendra Kumar guided to structure my approach to clinical diagnosis and management of different types of Neurological Disorders.


*Prof PN Tandon (at mike), Dr PA Suresh (1st left), Dr K Mohandas (The Director, SCTIMST) with dignitaries (2002)*

# Alumni portal...

What is more important if your intuitive mind is towards the unresolved almanacs of brain functions, to prepare for an examination or learn your subject in depth? My option for the latter would have been strange decision for any brilliant student. But, for an average student like me, whose inherent and intuitive dream was to explore the secret of nature and life, this decision was justified. Therefore, I was not shocked or dithered that I could not clear my final exams in the first chance; moreover, it gave me an opportunity to work under Dr PK Mohan in a project with International School of Dravidian Linguistics (ISDL) on linguistic basis of aphasia, an inter disciplinary study.

I do not exactly know when I started thinking about higher human cognitive functions. But, if I say these were intuitive thoughts that haunted me from my childhood, no one will agree that for its face value. I do agree that it got into shape through my training at SCTIMST. Later, Dr K Mohandas took over as the Director of SCTIMST and Dr Bindu Desai became the Head of the Department. I continued to work on my original research program on Aphasia and Cognitive Neurology, while there was a rush for "treatable Neurological Disorders" like Epilepsy, Movement Disorders, CNS infections and Neuroimmunological Disorders. I had several hurdles at that stage as there were no paramedical professional like Speech Language Pathologist or Clinical Psychologists. I started my real effort to get financial assistance through research projects and approached several funding agencies including DST; but, I was not lucky in these endeavors. Finally in 1997, Kerala Research Program for Local level development (KRPLLD) provided me with a grant for an "Epidemiological survey on the prevalence of Learning Disability and other developmental disorders leading to cognitive and communication disorders in children"; the survey was carried out in the rural population of Kerala, involving school children.

The results of the first phase of the survey revealed that 10% of the child population of Kerala has learning disability, or one or other form cognitive or language disorders that interfere with their language performance and learning. The impact of the results of the first phase of the survey was tremendous – it attracted the press, general public and the educationist of Kerala, both in the public and private sectors. The Behavioral Neurology clinic of SCTIMST soon showed an exodus of cases especially children with autism, learning disability and mental retardation. With the project fund, I expanded clinic of SCTIMST and thereby, Behavioral Neurology Service; two speech language pathologists and three clinical psychologists were posted to the clinic. But, the demand was so high that I alerted the Health and Education Department of Govt of Kerala and the concerned departments.

Soon, a Society for Rehabilitation of Cognitive and Communicative Disorders (SRCCD) was formed. Though the initial decision of the members of SRCCD was to expand the services at SCTIMST itself, considering the quantum of stake holders and the manpower required for the rehabilitation services, it was later decided that the project will be developed outside SCTIMST. Being the person behind the development of this project, I was deputed as the Director for the project.

In 1998, SRCCD was registered with an aim to establish institutions for comprehensive management, treatment, rehabilitation, manpower development as well as research and development in the area of cognitive and language disorders. The institutions under SRCCD were known as Institute for Cognitive and Communicative Disorders (ICCONS), and the first Institution was started in 2nd Oct 1998 at Trivandrum in a rented building. It was the first Interdisciplinary establishment for cognitive and communicative disorders in any Asian countries. The second Institution under SRCCD, ICCONS Shoranur, was established at Kavalappara, Palakkad district in 2000. In 2009, I took VRS from SCTIMST to continue as Director for Institutions ICCONS Trivandrum and Shoranur.

The journey from SCTIMST to ICCONS was a persistent and relentless struggle for over 18 years. I know establishing two Institutions for the service of a group of disorders that has not gained much attention from professionals or health planners, is an admirable, novel venture. My journey to ICCONS was not alone, I got the help of many people from all walks of life. I wish ICCONS will be the hope for all differentially abled individuals and will reach new horizons.

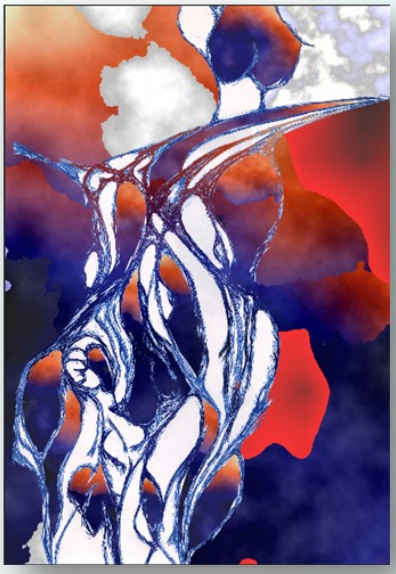
*ICCONS, Trivandrum*

*ICCONS, Shoranur*

# Imaginations Extraordinaire! Artistic Strokes by A Scientist....

***When passionate thoughts springs, artistic fingers gushes into extraordinaire artwork that is soul-satisfying, giving immense pleasure and innovating the Life! Yes, this is the description for the legendry artwork by Prof Ashutosh Sharma (Secretary, DST) who portrays his imaginations into sketches during his travel, a passion that has given him extraordinaire edge in life! Prof Sharma's collection exceeds 400+....***

***Circular Logic***



***She Walks Into The Clouds***

***Ancient Tree***

***Landscape With The City In The Sky***

***Faceless Rocks***

***Whirlpools Of Mind***

***Superhydrophobic Sensations***

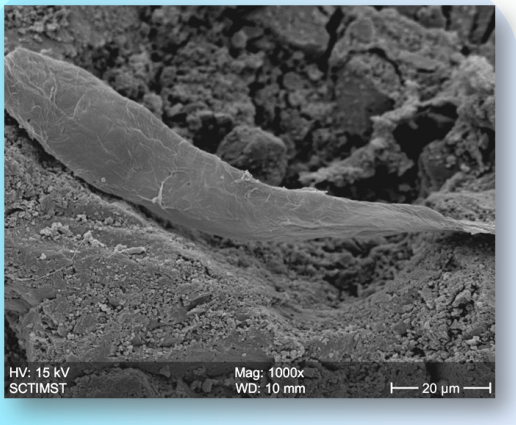
***Plasticity Of A Soaring Soul***

***An Unfinished Business***

*(Compiled by Dr Kamalesh K Gulia, Sc & Incharge, Sleep Disorders Research Lab, BMT wing)*

# Science Images from our research: In Quest of Artistic Titles...

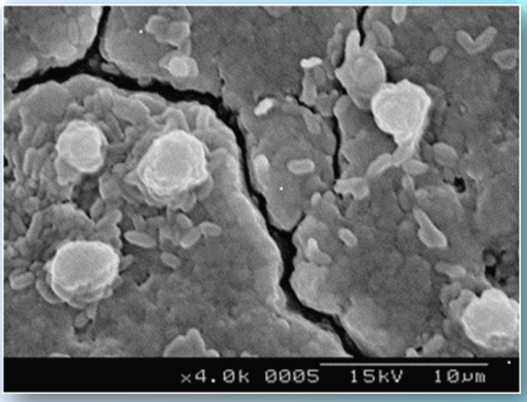
A




*Sheep adipose derived stem cell on a ceramic surface in Scanning electron microscope.*

Ms Sunitha Chandran, TEM Lab

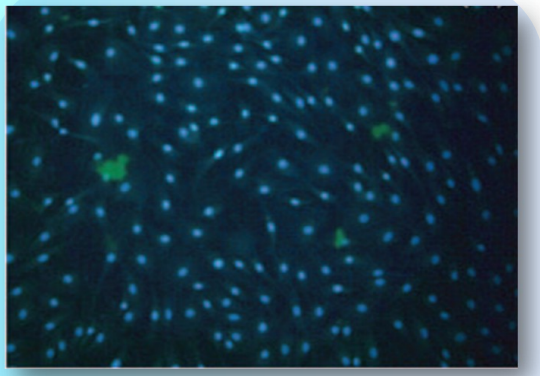
B




*E coli biofilm on Foleys catheter. The immune cells are completely surrounded by the E coli - a case of invaders establishing supremacy.*

Dr Maya A Nandkumar, Dept of Microbial Tech

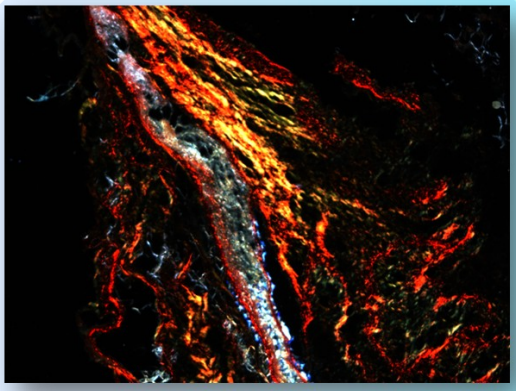
C



*Endothelial cells with nuclear staining and quantum dots uptake*

Dr Anugya Bhatt, Thrombosis Research Unit

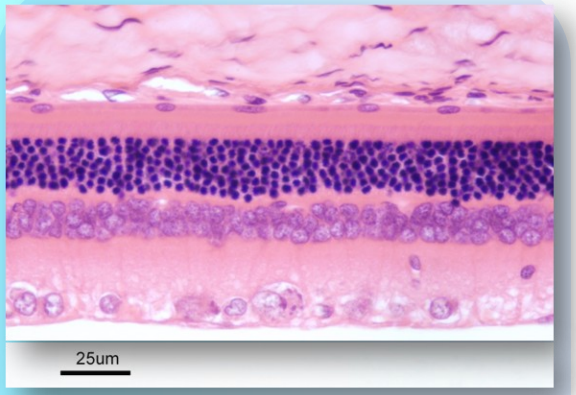
D



*Sirius red staining for collagen fibers viewed under a polarizer microscope.*

Dr Neethu Mohan, DTERT

E




*Retina of rat viewed under microscope.*

Dr Sabareeswaran A, Histopathology Lab

F

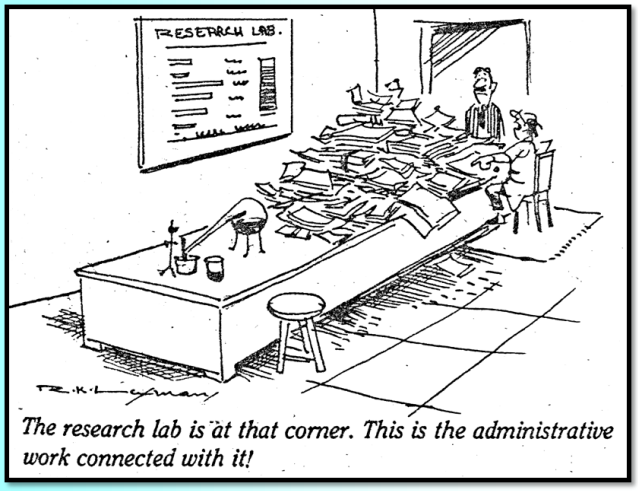
*The surface topography of solvent cast scaffold for blood vessel .*
*Ms Soumya Columbus, Dental Products Lab*

**Entries are invited for a suitable artistic title for these scientific pictures. The winner entries for each picture will be announced in the next issue.**

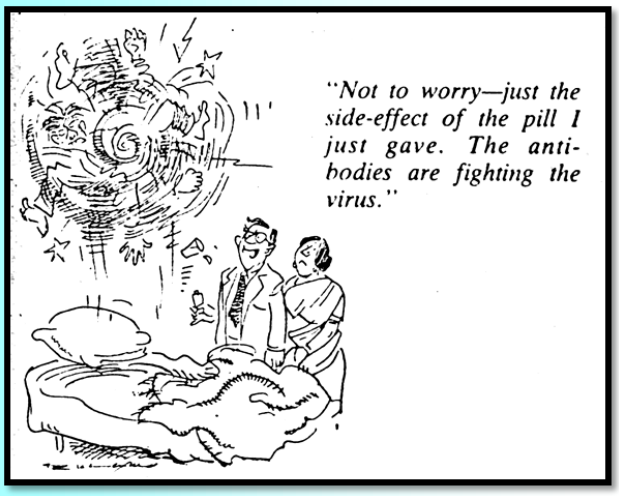
# RK Laxman: A Tribute to an Extraordinary Cartoonist...

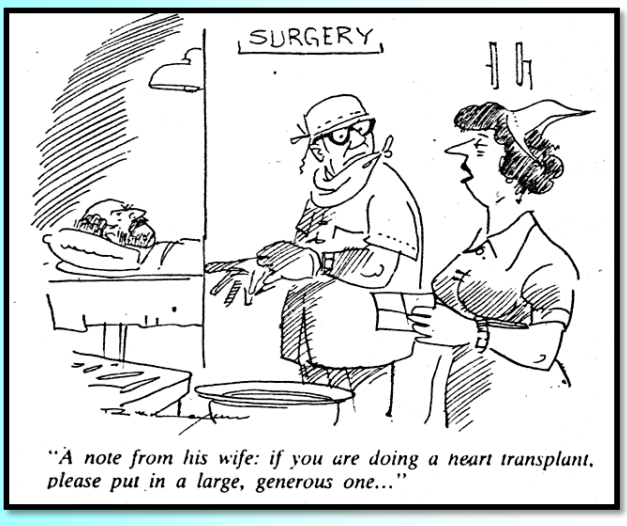
**RK Laxman pioneered and excelled science cartooning. He rocked the science readers with laughter through his column "This World of Science" in Science Today during 1980s & 90s.**

**Chitradhwani** brings out another facet of this legendary, eminent cartoonist, giving the glimpses of his funny expressions on Science. This is an invaluable tribute to the cartoonist par excellence, RK Laxman, who left us on January 26, 2015. His cartoon column **'You Said It'** in the Times of India featuring the iconic "common man" created satire targeting politicians for more than 5 decades.



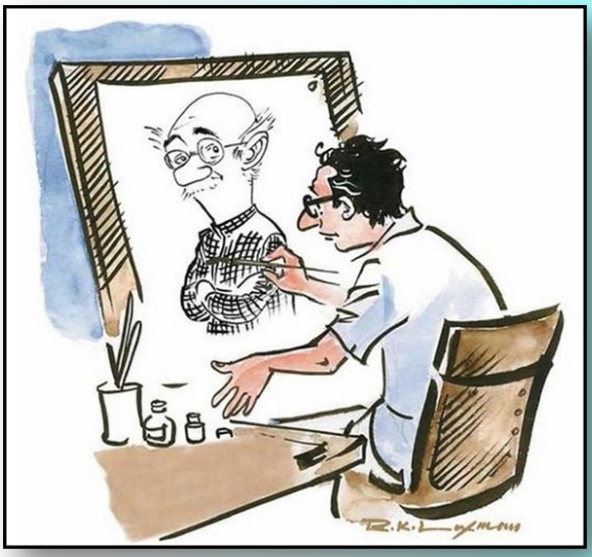
*The research lab is at that corner. This is the administrative work connected with it!*

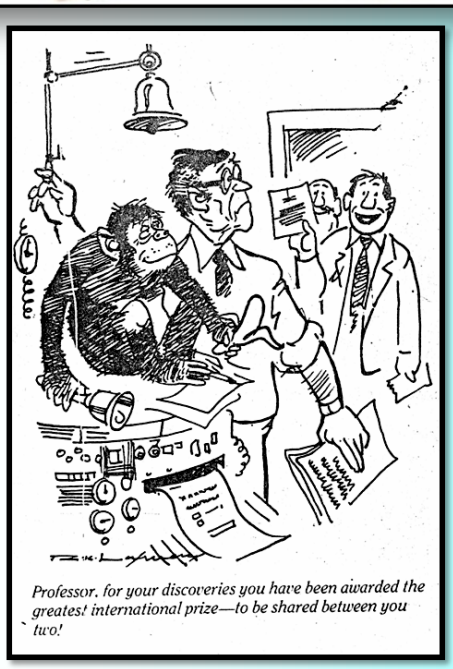

*"Not to worry—just the side-effect of the pill I just gave. The anti-bodies are fighting the virus."*



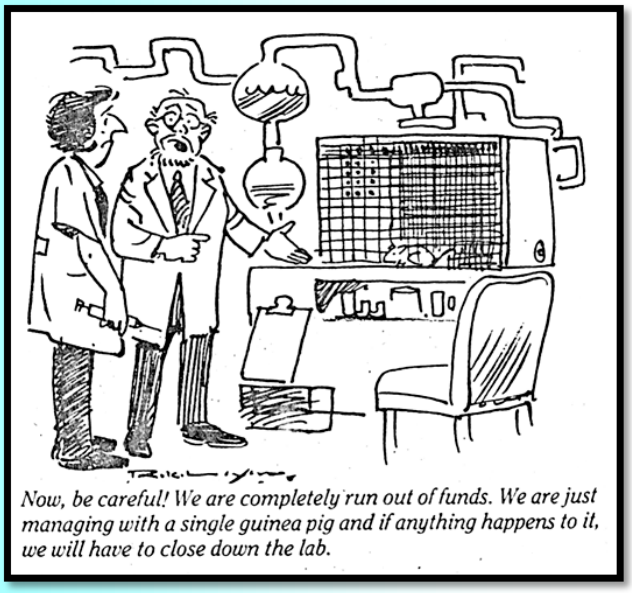
*"A note from his wife: if you are doing a heart transplant, please put in a large, generous one..."*

**Self-caricature, RK indulged in drawing the "Common Man" of his dreams and reality....**

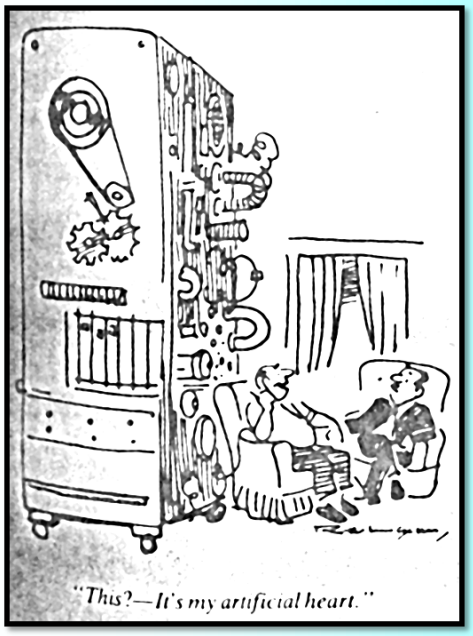



*Professor, for your discoveries you have been awarded the greatest international prize—to be shared between you two!*

*I still think you should have told him how young you wanted to look!*

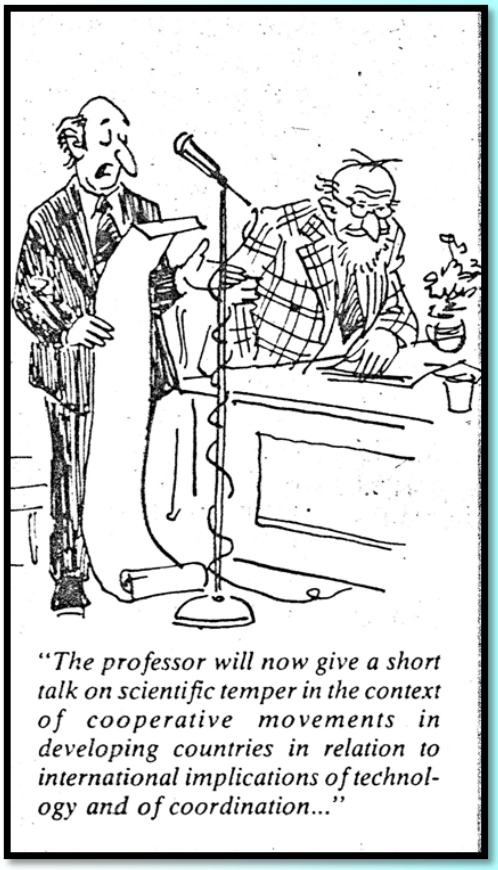


Now, be careful! We are completely run out of funds. We are just managing with a single guinea pig and if anything happens to it, we will have to close down the lab.



"This?—It's my artificial heart."

There. the artificial heart— he is fixing it to the wash-basin



"The professor will now give a short talk on scientific temper in the context of cooperative movements in developing countries in relation to international implications of technol-ogy and of coordination..."

"But, general, you always proclaimed you would use the atom for peace only. So I've made a harmless bomb which won't explode when dropped!"

*RK was very fond of crows. He projected the amazing beauty of this unattractive black bird through magnificent strokes of pencil in drawings.*

*(Cartoon Images contributed by Dr Manoj Komath, Bioceramics Lab, BMT Wing)*

# Did you know ???

### In built GPS in our brain!

Even if you don't have an amazing sense of direction, you aren't lost all the time. Your sense of place helps you to know where the closest bathroom from your desk is right now. In your home, you know where the kitchen sink is. Outside your apartment, you can always find your way to the corner store. The brain keeps track of these things using a combination of cells that referred to as **place cells** and **grid cells**. Place cells, which are associated with one specific location, are found in a part of the brain called the hippocampus, which is largely responsible for memory. In rat brain, the place cells are activated when the rats are in a specific location but will stay inactive at all other times. Grid cells, which help us understand the general space around us, are found in a nearby brain region, called the entorhinal cortex. These cells get activated in a perfectly shaped grid or hexagon when the animal moves through any space. Even though the mapping is incomplete, these cells are also found in humans. Together, the place and the grid cells create a sort of internal GPS.

The discoverers of these special components of the brain, James O'Keefe, Edvard and May-Britt Moser, were jointly awarded the 2014 Nobel Prize for Physiology. According to them, this discovery will help illustrate the connection between memory and location and it may help us understand why people with brain disorders like Alzheimer's get lost & end up confused about where their home is.

*(Contributed by Arathi R, PhD Scholar, Sleep Disorders Res Lab)*

***"Memory likes to play hide-and-seek, to crawl away. It tends to hold forth, to dress up, often needlessly. Memory contradicts itself; pedant that it is, it will have* its way."**

# Quiz winners!

### QUIZ 3 Winners

**National Institution for Transforming India Aayog: NITI Aayog**

**Uma V Sankar**
**PhD Scholar**
**AMCHSS, SCTIMST**

**Sreekanth SL**
**Scientific Assistant**
**Quality Cell, BMT wing**

**Peeyush**
**MPH student, Batch 2014, AMCHSS**

**Mereeta MV, DCVTN (2nd yr), SCTIMST**

**Rajesh K, Research Associate, AMCHSS**

**Shani SD, Staff Nurse, NMICU**

**Sumitha KC, Tech Asst (Lab), Biochemistry**

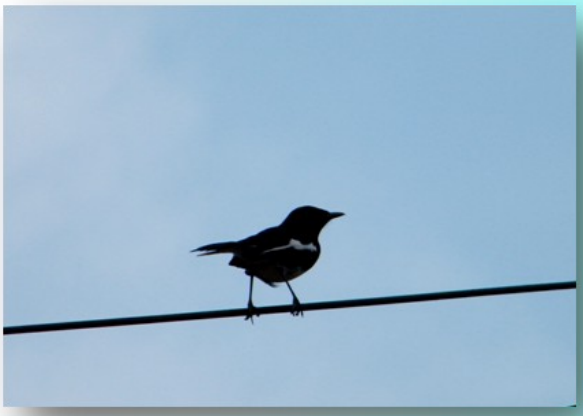
### QUIZ 4 Winner

**Devisavitha D**
**Office Assistant cum Data Coordinator**

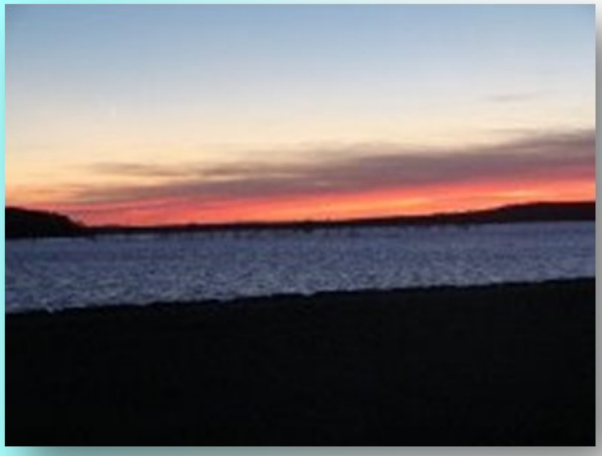
**Congratulations! Congratulations!**

# Camera captures!

*(Tomorrow by Rahul, DTERT, BMT wing , SCTIMST)*



*(Ready to Fly by Dr Manoj Komath, BMT wing , SCTIMST)*



*(Horizons by Dr Neethu Mohan, DTERT BMT wing, SCTIMST)*

*(Colours of Life ready to Revive by Arumugham, Calibration Cell, BMT wing , SCTIMST)*

*(Beauty of Nature by Prasad, Stores & Purchase Div, BMT wing , SCTIMST)*

# Opinions & testimonials...

*"Congratulations doing an excellent job! Perhaps a write up by Dr Valiathan if possible on future of medical devices in India and some general scientific news across the world may all be welcome"*

**Dr V Kalliyana Krishnan, Scientist G (Senior Grade), BMT Wing, SCTIMST**

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*"Dear Dr Gulia and Team, Please accept my hearty congratulations for the successful sustained effort to publish the E-zine for 2 years. Chitra Dhwani worked as a good platform to share the thoughts, events, achievements and activities. Wish all the best for all the future activities".*

**Dr SK Jawahar, DY Medical Superintendent, SCTIMST**

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*"The unification of medicine and technology is a core mission for us. The open and free expression of ideas is a core value. Many of us in the SCTIMST community wanted to express our views. Chitra Dhwani enabled this expression. Nice work!"*

**Er Muraleedharan CV, Scientist/ Engineer G, BMT Wing, SCTIMST**

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*"Chitra Dhwani has truly matured out to be the voice of CHITRAians and their talent. Wounderful job. We are proud of CHITRA DHWANI!"*

**Dr Maya A, Scientist F & In-Charge, Dept of Microbial Technology, BMT wing, SCTIMST**

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*"I am very happy to hear that Chitra Dhwani has completed successful two years. This could only be achieved by delivering quality based articles and pictures, the credit for all this goes to the Editor and Team members who worked day & night for the accomplishment of the Magazine. Hope that magazine does even well to connect all the employees in future. Congratulations and my best wishes!"*

**Mr Anil Kumar BS, Security & Safety Officer, BMT Wing, SCTIMST**

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*"You deserve hearty congratulations for the perseverant efforts in bringing out our 'in-house' magazine with its varied, interesting and educative contents. You have achieved, in addition, to significantly bring together our Chitra household in an atmosphere of currently diverging 3 components: Achutha Menon Centre for Health Sciences, Biomedical Technology wing and Centre for Cardiovascular & Neurosciences – the ABC of Sree Chitra, with formidable reputation."*

**Dr M Unnikrishnan, Prof (Senior Grade), Cardiovascular Thoracic Surgery, SCTIMST**

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*"I greatly appreciate the efforts of Dr Kamalesh Gulia and her team in bringing out the quarterly e-magazine Chitra Dhwani. If I am allowed to use two words to describe the magazine, I will call it "POSITIVE & ENCOURAGING". There are several interesting columns in the magazine. In short, the contributions from every member of the CHITRA FAMILY are highlighted. It would be nice if the editorial team can add a column on the "Visions & Dreams" of each Department. Though there are problems all around, the magazine brings out the best that our institute achieved in spite of these difficulties. I greatly appreciate the efforts of the editorial team and we hope to read Chitra Dhwani for many more years".*

**Dr C Kesavadas, Prof, Imaging Sciences & Intervention Radiology, SCTIMST**

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*"Chitra Dhwani is the voice of Sree Chitra family which conveys a bird's eye view of happenings at BMT Wing, Hospital Wing and AMC."*

**Ms Lekshmy, P&A Division, BMT wing, SCTIMST**

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*"Amalgamation of scientific talents with the creative ones is what Chitra Dhwani has done. The magazine echos the very heart beat of Sree Chitra. The features like "Memory Lanes" is truly awe inspiring for the future SCTIMSTians. Kudos to Chitra Dhwani Team."*

**Mr S Jayachandra Das, Librarian, SCTIMST**

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***Clicked by Dr Kamalesh K Gulia at Government Rose Garden, Ooty***


## Patron: Dr Jagan Mohan Tharakan, Director, SCTIMST

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**Co-Editors:** **Vivek Pillai** (*Dept of Cardio-Vascular Thoracic Surgery*)
**Manju Nair R** (*Achuta Menon Center for Health Science Studies*)
**Neethu Mohan** (*DTERT, BMT wing*)

**Our Potential Reporters: Arathi R** *(SDRL),* **Rahul** *(DTERT)*

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**Special Acknowledgements: Liji Kumar G and Vasanthi S** (*Medical Illustration Unit*)
**To one and all for their valuable Contributions**

**E-magazine by Research and Publication Cell, SCTIMST,** Trivandrum, Kerala, India

**Feedback** may kindly be sent to: **enewsletter@sctimst.ac.in**

(*The articles are invited for the next issue and may kindly be sent to the above mailbox*)