

CELL-e'BRATION

In - venting all that's STEMulating from NCRM

Bulletin of Nichi-In Centre for Regenerative Medicine | II Anniversary issue; Oct 2007; | Chamber II, Count I

STANFORD PROF. LAUDS
STEM CELL STUDY FOR
VASCULAR DISEASE,
PAGE 12



CORNEAL ENDOTHELIAL
PRECURSOR CELL STUDY
ATTRACTS INTERNATIONAL
INTERESTS..... PAGE 5



INITIATIVE TO
MOTIVATE INDIAN
STUDENT COMMUNITY
...PAGE 10

The 1st anniversary of NCRM was commemorated with very unique events of importance to both the scientists and clinicians.

The **Fujio Cup Quiz**, a quiz, exclusively on **Stem Cells & Regenerative Medicine**, probably the FIRST of such kind in India, started in the name of Dr Fujio Takayama of Japan was a big success and brought students of both life sciences and medicine together and made them realize the need for interaction. (www.ncrm.org/fcq)

Following Symposium was a great excitement to the audience as they listened to several success stories with clinical application of stem cells. The basic sciences and translational work presented by the NCRM-collaborating institutes revealed the potentials of technological strength of NCRM in bringing into reality, several novel, cell based therapies for diseases which have no option for treatment as of now.

The annual report was presented in the anniversary function in which the Honourable Consul General of Japan at Chennai Mr. Yoshiaki Kodaki was the chief guest and gave the prizes to winners of the quiz. In his speech, he appreciated the achievements of NCRM especially the inter-institutional and inter-personal exchanges between India & Japan NCRM has accomplished. He said such things are of paramount importance, as the whole world is becoming a global village.

The anniversary function was attended by the visiting faculty from Yamanashi University, Japan, Prof. Shigeo Tsukahara and Prof. Hideki Fujii. They both offered felicitations. The manager of student affairs division Mr. Motoya Yamamoto who was there, expressed his desire to make students from Japan participate in the quiz. Mr. Venkataramani, Trustee, Hope foundation, an organization supporting NCRM and Mr Sridhar, father of one of the quiz participants gave their feedback in the function which were very encouraging.

Eventful year; Commemorated with unique events



The Consul General of Japan giving the FUJIO CUP to the winners of the stem cell quiz

"The consul general stressed the importance of inter -personal and institutional exchange activities between India and Japan and appreciated the efforts of NCRM in making such things happen"

In this issue....

"Tissue engineering work on human chondrocytes"-paper in the Cairns ISSCR meeting

MoU for exchange program with a Japanese varsity

JSRM becomes the official journal of German society for stem cell research (GSZ)

MoU signed with ICMR - Institute of Pathology for study on wound healing

Spinal cord study gets appreciation in the Sydney ISCT meeting

The FIRST FUJIO CUP QUIZ on stem cells & regenerative medicine was inaugurated by Dr SGA Rao (*President Society for Tissue Eng & Regenerative Medicine*), had an overwhelming response from the students of both lifesciences and medicine. A MCQ type preliminary test was conducted to choose the finalists. The final six teams had total eight rounds of questions by the quiz master Dr. John - Sudhakar, who was ably assisted by a panel of experts viz., Dr. HN. Madhavan, Dr. Soma Guhathakurta, Dr. Philip Thomas and Dr. SGA Rao. The quiz was informative, entertaining and also motivating. It also made the participants and audience understand the importance of interaction between basic scientists and clinicians as some of the questions....



The quiz master with the finalists

which were easy to life sciences teams were found difficult by the medicos and vice versa. The questions were asked from Basics and essentials of (i) History and development of stem cells / Regenerative Medicine, (ii) Cell biology, (iii) Molecular Biology, (iv) Stem cells preclinical and clinical applications / Cell therapeutics, (v) Immunology, (vi) Cancer biology, (vii) Developmental biology.

The team from **PSG medical college, Coimbatore** were the winners and the team from **Christian Medical College, Vellore**, were runners.

The organizing committee acknowledges the help rendered by Dr. Annapoorni Rangarajan (*Indian Institute of Science, Bangalore*) and Dr. Shankar (*IBMS, Chennai*) with the quiz questions, the experts and Dr John Sudhakar, who made the event lively.



NCRM Advisory Board

Prof. Isao Sakaida
Yamaguchi University,
Ube, Japan
**(Stem Cells for Liver Cirrhosis,
Hepatology, Stem cell isolation)**



Dr. Hiroshi Terunuma
Biotherapy institute,
Tokyo, Japan
**(Immunotherapy, Cell Biology,
Cancer Stem Cells, Immunology)**



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(Nano-technology)



Dr. Hiroshi Yoshioka
Waseda University,
Tokyo, Japan
**(Biomaterials &
Tissue Engineering)**

NCRM Areas of Research

1. Corneal Limbal Stem Cells

Aimed at finding cell therapy solutions for corneal surface diseases such as Persistent Corneal Ulcer, Stevens-Johnson syndrome etc.,
Potential beneficiaries*: 15000 patients per year in India
(Collaborating instt.: Sankara Nethralaya, Chennai)

2. Hepatic Progenitor Cells

Aimed at finding cell therapy solutions for Acute Liver failure
Potential beneficiaries: 70,000 patients per year in India
(Collaborating instt.: Owaisi Hospital, Hyderabad)

3. Corneal Endothelial Precursors

Aimed at finding cell therapy solutions for diseases of the Corneal Endothelium such as Bullous Keratopathy
Potential beneficiaries: 12,000 patients per year in India
(Collaborating instt.: Joseph Eye Hospital, Trichy)

4. Retinal Stem Cells / RPE Cells

Aimed at finding cell therapy solutions for diseases of the Retina such as Age Related Macular Degeneration, Retinitis Pigmentosa etc.,
Potential beneficiaries: 60,000 patients per year in India
(Collaborating instt.: Aditya Jyot Eye Hospital, Mumbai)

5. Cell Therapeutics for Cartilage Defects

Aimed at finding cell therapy solutions for Focal Articular Cartilage Defects and Sports Injuries of the Cartilage
Potential beneficiaries: 60,000 patients per year in India
(Collaborating instt.: SRMC & RI, Chennai)

6. Cancer Stem Cells

Aimed at finding the characters of Cancer Stem Cells to develop targeted therapies for cancer.
Potential beneficiaries: Numerous
(Collaborating instt.: Indian Institute of Science, Bangalore)

6. Wound Healing

To find cell therapy based solutions using synthetic scaffolds for burns.
Potential beneficiaries: Numerous
(Collaborating instt.: Institute of Pathology, ICMR, New Delhi)
* Numbers are approximate and indicate the beneficiaries when the concerned research developments convert to a clinical application

The new logo of NCRM, in which in a background of the existing ("N&I" as a dot on N rotated to 45 Deg X 4) Nichi-In logo, the traditional "Snake on stick by Moses" symbol of the medical fraternity has been engraved, was released by Capt. A.Nagarajan (Director, Anna-Institute of Management, Chennai) and Prof.N.Krishnaswami (Indo-Japan Chamber of Commerce),



Prof. N.Krishnaswamy, Dr.NS.Sundaram, Dr.Abraham, Capt.Nagarajan, Dr SGA.Rao

during the inaugural session of the first anniversary programme.

Earlier, "Journal of Stem Cells & Regenerative Medicine" was launched by Dr.NS.Sundaram, (Former director, RIO-GOH, Chennai) online. This journal originally started for the student community has now become the official journal of the German Society for Stem Cell Research (Details page 06)

Two students Ms.S.Mahalakshmi, & Ms.G.Aruna were honoured with a memento during the Anniversary function for contributing to the JSRM inaugural issue.

Earlier Ms. Dhanalaxmi Viswanathan lighted the lamp to inaugurate the events.



Dr.Sharat Damodar (Speaking), L>R Dr.SR.Subrammanian, Dr.G.Sitalaxmi, Dr.CA.Nelson Jesudason, Dr.S.Arumugam, Dr.H.Fujii, Dr.V.Dedeepiya & Dr.Jayanthi (Insert) during the symposium.

The First Anniversary Symposium had a balanced representation of speakers from basic sciences, translational research and clinical application in specialties of medicine in which NCRM team with the collaborators have been working.

Dr. Sharat Damodar, (Narayana Hrudayalaya, Bangalore), presented a case report on Autologous Immune Enhancement Therapy for Cancer, and Dr. SR. Subrammanian, (Vijaya hospitals, Chennai) presented a case report of stem cell therapy for Critical Limb Ischemia in a diabetic ischemia. Both the above could probably be the first such attempt in India. Dr. G. Sitalakshmi, (Sankara Nethralaya, Chennai) narrated the stem cell work on corneal epithelial diseases till date which was started in 2002.



Dr.SSK Marthandam

Dr. C.A. Nelson Jesudason, (Joseph Eye Hospital, Trichy) presented the collaborative work with NCRM on corneal endothelial precursor cells. Dr. S.Arumugam (SRMC & RI (DU), Chennai) talked about autologous human chondrocytes ex-vivo expansion for articular cartilage injuries with information the current practices.



Dr.Geeta Jotwani

Prof. Hideki Fujii, (Yamanashi University, Japan) talked about the scenario of acute liver failure in Japan, following which Dr. Jayanthi, (Stanley Medical College, Chennai) threw light on the scenario of acute liver failure in India. Dr Dedeepiya spoke on the potentials of biomaterials in encapsulated delivery of hepatocytes to treat acute liver failure.



Dr.P.Rajendran

The symposium was moderated by Dr. Geeta Jotwani, (ICMR, New-Delhi) Prof. S.S.K.Marthandam, (SRMC & RI (DU), Chennai) and Dr. P. Rajendran, (Dr ALM PG IBMS, Chennai).

NCRM listed one among the top 107 RM institutes in the world

Research and Markets Inc., a global market research organization has listed "Nichi-In" as one among the 107 Regenerative Medicine institutes, in their world-wide analysis of market for the RM. The report titled "Regenerative Medicine - Global Strategic Business Report" is available online at:

http://www.researchandmarkets.com/reportinfo.asp?report_id=338519

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NCRM websites.....

www.ncrm.org, www.nichiin.org, www.ncrm.in, www.nichiin.com, www.nichi-in.com

ICMR Stemcell Experts at NCRM*



Dr. Geeta Jotwani,

Senior Res. Officer,
Indian Council of
Medical Research,
New Delhi.

"Highly enthusiastic, committed team. Best Wishes for achieving the goals"



Dr. S.S. Agarwal,

Former Director,
Tata Memorial
Centre, Mumbai.

"Interesting efforts with lot of potential. Best wishes. India needs innovative science."



Dr. Dipika Mohanty,

Advisor,
ICMR,
New Delhi.

"Happy seeing the culture facilities. Very good attempt for Cell Therapy. Best wishes for the success"



Dr. P.B. Seshagiri,

Dept of MRDG,
Indian Instt of Science,
Bangalore.

"Infrastructure of NCRM is very professionally created and it is QC- conscious. The clean facility for culturing human tissue is very good. My best wishes to NCRM to sustain the standard. "

*The team made an official visit to NCRM on the 07th of May 2007

MoU signed for Collaboration with Yamanashi University-Faculty of Medicine, Japan.



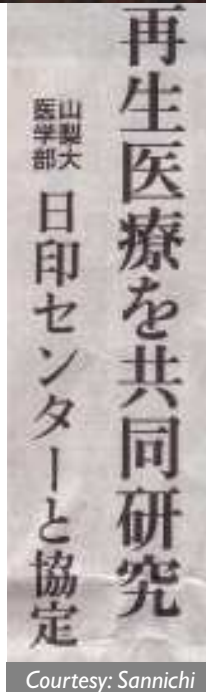
L>R Prof. Fujii, Dr. Abraham, Prof. Maeda & Prof. Hamada

Yamanashi University - Faculty of Medicine (YUFM), a National University in Japan with a tertiary referral hospital and 13 affiliated teaching hospitals in Japan, represented by the Dean- Faculty of Medicine Prof. Maeda and the NCRM, represented by its director Dr. Abraham, signed a MoU for exchange of personnel, information pertaining to research activities and joint research projects on the 9th April 2007.

This is the first time, YUFM is signing a MoU with an Institute in India. The Karolinska Institute, Sweden is one among the other institutes with whom YUFM has signed such MoU.

This collaboration was made possible after the recommendation by a team of faculty members of YUFM who visited NCRM in October 2006, during which they apart from visiting the facility, visited the collaborating institutes to know about the various research projects and allied credentials of the projects and future plans.

This collaboration will further strengthen NCRM's academic and research activities.



Courtesy: Sannichi

Collaboration for Stem Cell Application in Liver Cirrhosis with Prof. Sakaida et al.,

Prof. Isao Sakaida, Head, Dept. of Internal Medicine, Yamaguchi University, Japan, a pioneer in stem cell isolation studies and their application in treating Liver Cirrhosis has consented to collaborate with the NCRM team and to offer guidance in the relevant fields of study.



Prof. Sakaida with Dr. Abraham after their meeting in Tokyo, 19 Jan `07

Prof. Sakaida has proven in animal models that Bone marrow stem cells injected into peripheral vein could reach the liver and repair the hepatocytes damaged by toxins. They have already started treating patients with Liver Cirrhosis in the Yamaguchi University Hospital after an initial study which was proven very successful and published in a peer reviewed journal.

NCRM will follow their know-how in taking up similar studies for Liver Cirrhosis.

**СОВРЕМЕННЫЕ МЕТОДЫ
ДИАГНОСТИКИ И ЛЕЧЕНИЯ
ЗАБОЛЕВАНИЙ РОГОВИЦЫ
И СКЛЕРЫ**



**RUSSIAN ACADEMY APPRECIATES
THE CONTRIBUTION OF NCRM TO
CORNEAL STEM CELL WORK**

The corneal endothelial precursor cell transport and sphere forming assay as per the guidance of

Dr.Amano et al.,using the TGP material provided by Prof. Mori, was appreciated by the Russian State Eye Institute run by the National Medical Academy Moscow, as the invited lecture by Dr.Abraham was presented at their annual meeting on Cornea.



Prof. Sergey Kiselev

This opportunity also helped to have an interaction with Prof. Kiselev (*Instt. of Gene Biology*) and Dr.Isaev (*Publisher, Journal of RM in Russian*) Prof. Kiseleva (*State Eye Instt*) who have shown interest in collaborating with NCRM on activities such as Journal of Stem Cells & Regenerative Medicine, research on undifferentiated expansion of specific sub-set of stem cells and transportation and cryopreservation of different kinds of cells.



Dr. Artur Isaev



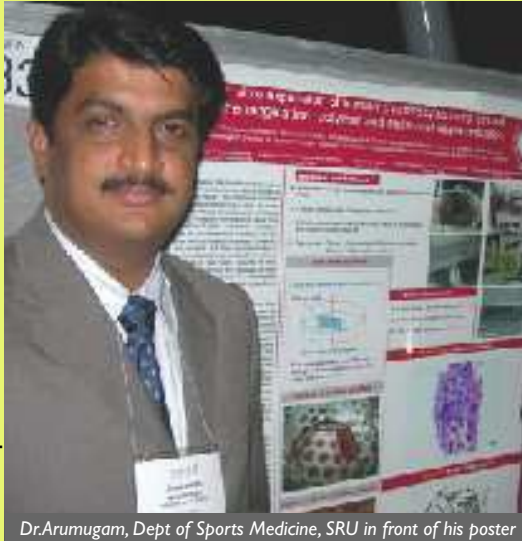
Prof. Tatiana Kiseleva

International meetings.....



**Two presentations
in ISSCR, Cairns.**

I. The collaborative work on Tissue Engineering of human chondrocytes in 3D form with Sri Ramachandra University, Dept. of Sports Medicine, was presented in the ISSCR meet which received several positive comments from the attendees.



Dr.Arumugam, Dept of Sports Medicine, SRU in front of his poster

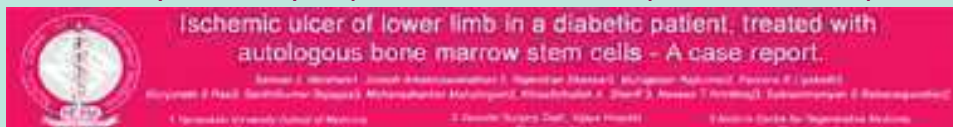
Autologous chondrocyte implantation is a routine clinical procedure in which, the non-weight bearing area cartilage tissue of the patient are grown in vitro and transplanted to the diseased portion of the cartilage in the weight bearing area. Now the cells are implanted using a bovine collagen as scaffold.

This study is aimed at (i) developing a technique to grow chondrocytes without animal cells and (ii) extending the in vitro viability of cells in culture. The successful outcome of the study in both the aspects was presented.

This successful outcome in the laboratory, when becomes a clinical application has a great potential in helping the victims of sports injuries.

II. Application of autologous bone marrow stem cells in a diabetic and hypertensive patient who had critical limb ischemia, which could help limb salvage, was presented as a case report by the NCRM-Vijaya vascular surgery team in the meeting.

The attendees, especially from developed nations showed lot of interest as they have many amputations due to similar problems in their places.



SCRFI meeting at Bangalore



Dr. Vinay, Dr Subramanian & Dr Balasubramanian (DBT-Stemcell task force) at SCRFI

DR. VINAY, DR. SUBRAMANIAN, DR. BALASUBRAMANIAN (DBT-STEMCELL TASK FORCE) AT SCRFI

DR. VINAY, DR. SUBRAMANIAN, DR. BALASUBRAMANIAN (DBT-STEMCELL TASK FORCE) AT SCRFI

DR. VINAY, DR. SUBRAMANIAN, DR. BALASUBRAMANIAN (DBT-STEMCELL TASK FORCE) AT SCRFI

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DR. VINAY, DR. SUBRAMANIAN, DR. BALASUBRAMANIAN (DBT-STEMCELL TASK FORCE) AT SCRFI

Journal of Stem Cells & Regenerative Medicine (JSRM)... becomes the official Journal of German Stem Cell Society

The General body meeting of the GSZ conducted immediately after the 1st Annual meeting held in Cologne on the 3rd of November 2007, unanimously accepted to support the JSRM as it's official journal.

The abstracts of the 2nd meeting of the GSZ are now available online and from now it will be published quarterly.

Subscription is free for all, as before and we welcome all those interested to subscribe to JSRM, do so online by accessing www.pubstemcell.com



ISCT meeting at Sydney....



With Dr Fernandez Vina of Argentina, a pioneer in stem cell applications

The International Society of Cell Therapy- 2007 annual meeting at Sydney, witnessed several reports from all over the world on stem cells applications with excellent results, especially in Neuronal diseases.



The initial reports of our study on Spinal Cord Injury with Lifeline Hospital was presented at the meeting and many other groups working in the same area were delighted to share their stories with us to prove the reproducibility of the same making it authentic.



Dr Abraham, with Prof. Hescheler, the President of GSZ and Dr.Schaffer of University of Cologne at the First Annual Meeting after the General Body.



Dr Shigeru Kinoshita, Dr Abraham & Dr.G.Kumaramanickavel at Asia ARVO

The Asia ARVO meeting conducted once in two years was this time held in Singapore. The study on Corneal Endothelial Precursors with Joseph Eye Hospital, Trichy was presented in a Symposium moderated by experts. Several research groups from various places interacted with our team on collaborating with us in similar projects, as this study has developed a cost effective method for transportation of fragile corneal cells and further expansion.

Faculty from Yamanashi, Japan Pre-collaboration visit to NCRM

Prof. Tsukahara, Vice-President, Prof. Fujii, HOD, Dept. of Surgery and Mr. Yamamoto, Manager students division, of Yamanashi University-Faculty of Medicine (YUFM) paid a pre-collaboration visit to NCRM and collaborating institutes in India to adjudge their credentials. They visited almost all the collaborating centres and spent two days in NCRM interacting with scientists and staff to know in-depth, the research projects. They also participated and gave talk in the First Anniversary in October 2006.



L>R Prof. Tsukahara, Prof. Fujii, Mr. Yamamoto in front of Frontier Institute



YUFM team with the scientists at Indian Institute of Science, Bangalore



With the Chancellor (Sitting 2nd from Rt) of Sri Ramachandra University

Sankara Nethralaya, Frontier Lifeline, Sri Ramachandra University and Vijaya Hospital in Chennai; Narayana Nethralaya and Indian Institute of Science in Bangalore were the places visited by the team.

Their report submitted upon returning back to Japan to the board of YUFM, paved the way for a MoU getting signed in April 2007 between the institutes.

MoU with ICMR- IOP

To perform research on wound healing

The Institute of Pathology, ICMR, New Delhi entered into a MoU with NCRM for a collaborative study on wound healing, with an aim of helping the victims of burns.



Dr Saxena (Left) exchanging MoU with Dr Abraham; Dr Rajpal looks on

As earlier proven by the Japanese collaborators of NCRM, skin epithelial stem cells and other components could be cultured in vitro without 3T3 animal feeder layer. Similar technology will be employed in the joint research. With this new approach a large number of patients with moderate to severe burns could be saved in several burn centers across our country with reduced hospitalization period.

Dr Sunita Saxena, Director, IOP-ICMR and Dr Lakshmana-Kumar Yerneni, Senior Research Officer will be the investigators in this study together with the scientists from NCRM.

Visit to Victor Chang Institute, Sydney



Dr. Abraham after the meeting with Prof. Graham at Victor Chang Institute



Dr. Vashetharan

Dr Abraham gave an invited talk in the Victor Chang Cardiac Research Institute in Sydney on regenerative medicine-studies of NCRM. This meeting had been arranged by Dr Vashetharan with the support of Prof. Rob Graham, Director of the Institute. RM has tremendous potentials in Cardiology.

Followed by the MoU with the Yamanashi University-Faculty of Medicine (YUFM) in April 2007, a team of medicos from Japan visited the NCRM centre in Chennai and also the various collaborating centres across the country.

In Chennai, they visited Frontier Lifeline, Sankara-Nethralaya, Lifeline Hospital and learned about the regenerative medicine work, going on in these institutes.

They also visited Darshan eye care and Stanley Medical college, before leaving for Delhi.

In Delhi they visited the Stem cell facility of the AIIMS and the Institute of Pathology, ICMR.

They all appreciated the clinical and research skills of the Indian health care personnel and were surprised to see many women in this field.

Regenerative Medicine, (RM) being an evolving specialty, a curriculum for the same has not yet been started and NCRM is planning to start such a programme for giving training to both basic scientists and clinicians in this specialty.

RM is unique in several ways. It needs both clinical and basic science expertise & it requires a knowledge of each and every specialty of medicine where there are potentials for application.

Multispecialty interaction within and among the institutes in Japan and India will pave way for new breakthrough developments, we hope. This visit is a humble beginning of the same.



Team members with Dr KM Cherian at Frontier



In Sankara Nethralaya



At Life line Hospital



Interacting with Dr Saxena, Director, IOP, ICMR



With the team of Dr Sujata Mohanty, AIIMS

Tribute to a Titan

Dr G. Sitalaxmi was the principal investigator in the NCRM-Sankara Nethralaya collaborative research on the "Application of corneal limbal stem cells in ocular surface disorders".

She is no more with us, but still her vision, hope and dedication stands immortal in the work that we started.



Ever-smiling, ever-approachable, ever-enthusiastic and never-tiring, she redefined the entire translational work to a new benchmark.

She had several international publications and guest lectures to her credit. Armed with expertise, clinical acumen and surgical skills, she brought a new dimension to our team work, aimed at giving vision to thousands of fellow human beings suffering from corneal blindness.

We have been robbed of an icon.

We pledge to keep her visions and hope immortal.

As a tribute, we dedicate the II anniversary symposium to her cherished memory.

1. Isolation and expansion of hematopoietic stem cells, their cryopreservation and evaluation of long term viability.

2. Un differentiated expansion of peripheral blood, umbilical cord blood and bone marrow stem cells.

3. Isolation and expansion of adult stem cells of different tissues and studying their transportation, cryopreservation and transplantation for relevant diseases.

4. Isolation and expansion of stem cells of neural lineage from different sources and studying their potential for expansion in vitro and survival in vivo upon implantation as well as suitable substrates for the implantation.

NCRM and ETHICS

NCRM has an Institutional Ethics Committee (IEC) since its inauguration. This committee oversees all the projects of NCRM.

As per the recent guidelines of the Indian Council of Medical Research (ICMR), an exclusive IC-SCRT (Institutional Committee for Stem Cell Research and Therapy) has also been constituted with periodical meetings following the guidelines stringently.

Regular reports are sent to the relevant authority as per the guidelines.

On the 07th May 2007, the ICMR - Stem Cell Task Force members visited NCRM (Details page 04)

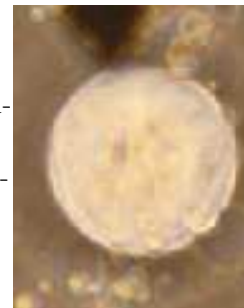
Developments with the ongoing projects

Corneal Limbal Stem Cells ; Sankara Nethralaya

The animal studies have been completed successfully with good results and the next step of the study is under planning. The results of this study was recently presented in the Asia ARVO meeting by Dr.G.Sitalaxmi.

Corneal Endothelial Precursor Cells ; Joseph Eye Hospital

The transportation of peeled off corneal endothelial layer to a central lab and its culture expansion as a sphere forming assay have been successful. Before going to the next step, we are studying various methods of application of the spheres into the anterior chamber of the eye, which should be easy and reproducible, yield an easy and faster settling of the cells transplanted and should neither leave any haziness nor affect the flow of the aqueous humour. Interim reports of this study has attracted the interest of many research groups from various countries.



Endothelial sphere

Retinal Stem Cells & RPE Cells ; Aditya Jyot Eye Hospital



Dr.S.Natarajan (Right) with Mr.Yoshio Morozumi in Tokyo, Japan

As one of the approaches for treating Age Related Macular Degeneration (ARMD), Retinal Stem Cells from Ciliary Pigment Epithelium were taken and culture expanded as per the guidance of Prof. Derek Van Der Kooy of University of Toronto, Canada.

But the feasibility of harvesting the CPE without any sequelae are being worked out.

The Second approach being the usage of Retinal Pigment Epithelial Cells (RPE), a culture expansion of the RPEs harvested from cadaver eyes have been successful and the same was presented in the SCRFI meeting in January 2007.

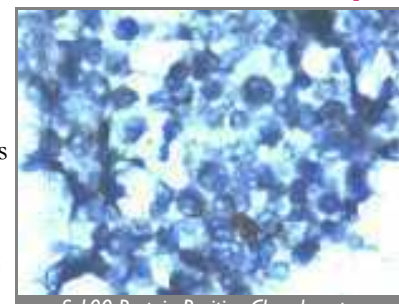
Now that the basic work has been over, the animal studies will be started in which the efficacy and safety of the procedure will be confirmed.

Dr.S.Natarajan, Chairman of Aditya Jyot Eye Hospital visited Japan and had a discussion on this project with Mr. Yoshio Morozumi, Chairman Nichi-In, at Tokyo on the 23rd of March 2007.

This study when successful is likely to help thousands of patients who suffer from ARMD for which at the moment there is no definitely curative treatment available.

Chondrocytes 3D expansion ; Sri Ramachandra University

Three dimensional expansion at the laboratory level have been successful and the same has been presented in international meetings. Studying the safety and efficacy of the grown 3D chondrocytes in a suitable animal model is the next step in this study. A successful outcome would be of much help to victims of sports injuries and similar joint problems.



S-100 Protein Positive Chondrocytes

Stem Cells in Heart Diseases

Encouraging Outcome in Early Follow-up

Patients with end stage heart failure have very few treatment options. The long waiting time for transplant and the complications associated with immunosuppression has led to the search for alternatives. Subsequent to the isolation and characterization of stem cells, tremendous advances have been made and the safety and feasibility of autologous bone marrow derived stem cells has been proven in several preclinical studies and reported in peer reviewed journals.

Clinical studies have also shown mobilized cells repair the infarcted heart, improving function and survival. A clinical study to evaluate the efficacy of bone marrow derived stem cells has been started by Frontier - Life line- Dr.K.M. Cherian Heart Foundation, since January 2007, in collaboration with NCRM.



Mr. Amir Makhani

The initial results done till date have shown significant improvement in the patient's Quality of Life and that has been proven by objective investigations such as Scintigram.



Mr. Khaja Mydeen after therapy with Dr Madhu (Lt) and Dr Kirtivasan (Rt)

With the changing lifestyles in India increasing the incidence of Ischemic Heart Diseases, that too in the 30s and 40s, post-interventional or surgically treated patients with a very poor cardiac function are likely to increase for whom no option is available at the moment.

Benefits of Stem cells, having been proven in the initial outcome, further research to (i) improve their capability for homing into a new environment, (ii) increase their viability post-transplantation and (iii) expansion of their sub-sets and cryo-preservation for future usage, in case of the patients bone marrow not yielding adequate number of stem cells are underway at NCRM.

The potentials of stem cells in cardology are enormous.

One day workshop by JSRM

An one-day, comprehensive workshop on Research and scientific publishing was conducted for budding scientists on the 27th of January 2007



...Started by NCRM and now the official journal of German Stem Cell Society

<http://www.pubstemcell.com>

Group discussions and case studies in the afternoon session followed a series of lectures and interactive sessions in the forenoon by experts.



Dr.HN.Madhavan

Intellectual Property issues by Capt.A.Nagarajan, **Ethics** by Dr. J.Amalorpavanathan, **Clinical studies** by Dr.SR.Subrammanian, **Misconduct** by Dr.G.Kumaramanickavel, **Planning** by Dr. S.C.Parija, **Peer Review** by Dr Prabhu, and **Scientific writing** by Dr.John Sudhakar were the topics discussed.



Dr.R.Raveendran

Dr. R. Raveendran, presented the importance and intricacies of Statistics and moderated the entire forenoon session.

Dr.H.N.Madhavan, moderated the case study session and gave away the certificates to all the participants of the workshop.

You can subscribe to JSRM
a free online journal

You may access it by clicking
www.jsrmonline.com

(or)

www.pubstemcell.com

Weekly news updates already started

Continuing feedbacks of encouragement

Starting with that of Mr.Akbar Ali who had a dramatic improvement after an autologous bone marrow stem cell injection, such encouraging feedbacks have been continuing as we hear from several other patients.



Akbar Ali (Middle) with the NCRM- Lifeline team and Consul of Japan Mr.Okada (2nd from Rt)

Many victims of Spinal Cord Injury at the moment have no option for regenerating the damaged spinal cord and remain paraplegic, depending upon the severity of the damage. The stem cells have infused a lot of hope to such patients after several successful outcome, following the initial one reported in a study conducted by Life Line Hospitals, Chennai.



Mr.P.Singh

The stem cells secrete Neurotrophic factors which have been proven to induce the regeneration of damaged neurons and the blood vessels. Though there are various sub-sets of stem cells and different methods of isolation and expansion reported from other institutes all over the world, the procedure adopted by NCRM uses stem cells from the patients own bone marrow.

There is no usage of animal or other contaminating biological substances used in the process of isolation and related preparation methods.

Further studies to have a detailed information about the quantum of damage to the neurons and blood vessels would be helpful in standardizing the dosage, based upon severity of the damage.

The NCRM team has been continuously working in various ways in collaboration with institutes of international reputation, to improve further, the outcome.

Expansion of sub-sets of stem cells without using animal serum or other biological materials for multiple injections from a single specimen of bone marrow, Expansion of Endothelial Progenitor Cells (EPC) in an undifferentiated manner are a few to mention.



Mr.K.Reddy



Mr.K.Srinivas

News in Brief

Feb 2007: Mr.A.T.Naveen (Scientist, NCRM), lighted the lamp to inaugurate the National Seminar on Stem Cells & Regenerative Medicine at Katuru Medical College, Guntur.



He also gave a talk on the basics and trends in Regenerative Medicine in the meeting.

Feb 2007: Dr.Abraham inaugurated a Centre for stem cell studies in the Maruthi Hospital, Erode

where collaboration with NCRM would start for stem cell research and applications in treatment for Liver Cirrhosis and Spinal Cord Injury.

Dr. Sadasivam and Dr Nirmala (Rt & Lt extreme respectively in the picture) would be the investigators.



May 2007: A MoU was signed between NCRM and Ahmedabad based Lancer Medical Technologies,

to develop, hybrid cardiac stents with cell based technologies aiming at developing stents with lesser restenosis and foreign body reaction which is expected to yield a longer duration of patency of the lumen of the coronaries.

Dr.Neuss (Seen in the picture with the stents in his hands) is one of the advisors in the study.



Jul 2007: An interactive session was organised at Kovai Medical Centre & Hospital, Coimbatore by Dr.Pattabhiraman (Consultant Pulmonologist) in which a detailed presentation

on stem cells and their clinical applications was given by Dr.Abraham. Dr.Parthiban (Neurosurgeon) and Dr Chinnasamy (Director, Laboratory) discussed the prospects. (Both seen in the picture Lt & Middle respectively)



A pat from
Stanford
to NCRM team...



"...I think,
the group from
Chennai should be
commended for the
high throughput
manner, in which
they isolated and
purified the bone
marrow cells.
I think this is a
real contribution...."

Dr. Charles C. Gurtner,
Associate Professor of
Surgery
Stanford University -
School of Medicine
257 Campus Drive,
GK-201
Stanford, CA 94305-5148,
USA.

Successful limb salvage using stem cells... in a diabetic patient with limb ischemia,

In what is believed to be the first such attempt* in India to have ended up in successful limb salvage, the Vijaya Vascular-NCRM team has given to a woman in her 60s, the ability to be on her own foot, if not for which, her left leg would have been amputated.

With an angiogram of occluded vessels below left knee and an ulcer occupying almost 40% of the entire surface of skin below the knee & a recommendation for amputation from two previously seen physicians, Mrs. Vimala, a Diabetic and Hypertensive for 18 years, presented herself to the Vascular Surgery Department at Vijaya Hospital, .

Dr.S.R. Subrammanian and Dr.J.Amalorpavanathan discussed with the NCRM team regarding the stem cell isolation and injection, as per the literature and upon getting appropriate approvals and consents, they injected her own stem cells taken from bone marrow, isolated and suspended in cGMP clean room and following proven SOPs by NCRM.

The injections were given three times and the wound healed gradually in 4 months, skin grafting was successful, & vascularity improved, proven by CT-Angio and Tonometry, with significant ABL improvement.

**She is back on her
own foot now.**

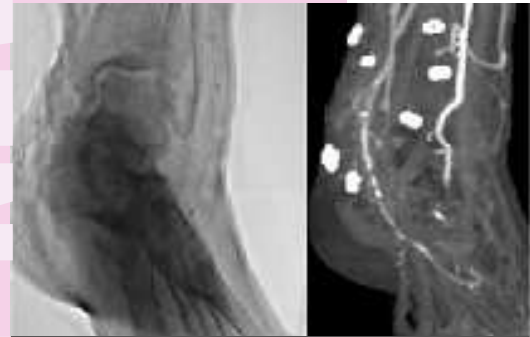
* In a diabetic patient with an
ischemic ulcer of 35X18 CM size



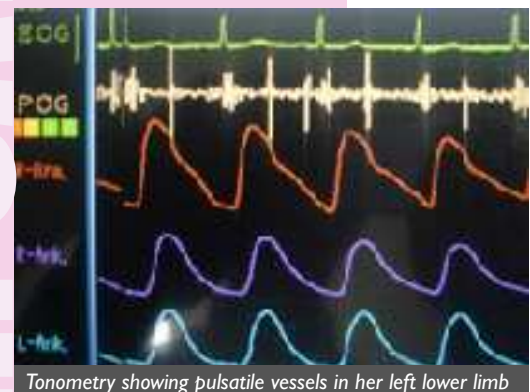
The ischemic wound upon admission



The fully healed area after 6 months



Angiogram: Before (Left) and After (Right) the SC injection



Tonometry showing pulsatile vessels in her left lower limb



Mrs. Vimala, Dr.SR.Subrammanian, Dr.J.Amalorpavanathan