

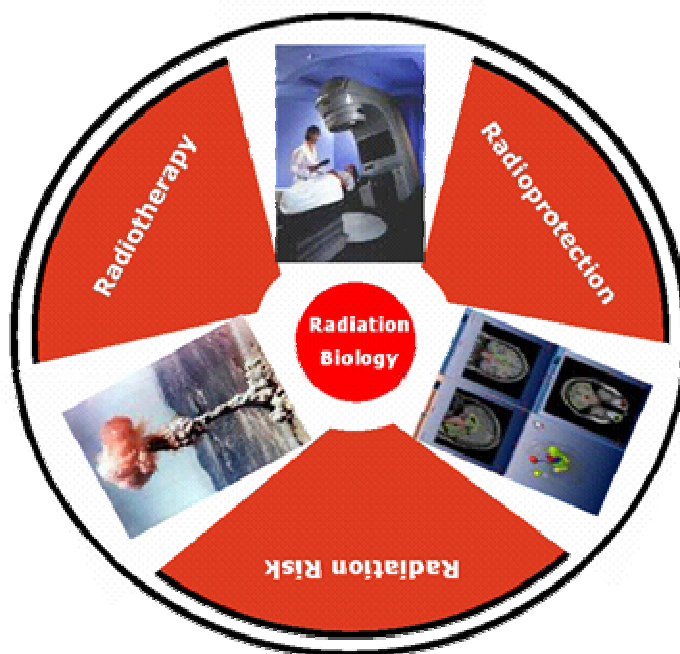


# **RADIATION SCIENCE TODAY**

*A Quarterly eNewsletter*

*published by*

**INDIAN SOCIETY FOR RADIATION BIOLOGY**



**Email:** [isrb\\_enewsletter@yahoo.co.in](mailto:isrb_enewsletter@yahoo.co.in)

**Web page:** [www.freewebs.com/isrbenewsletter/](http://www.freewebs.com/isrbenewsletter/)

# Radiation Science Today

July-September, 2009 **Issue: 7, Year: 2009**

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## EDITORIAL

### The Organization Which Matters

The radiation effects to cells are governed by many cellular and extra-cellular factors. The two dimensional (2D) cell cultures are commonly used to investigate the radiation effects at cellular level, which is due to ease to handle the cells and to conduct the experiments. However, compared to 2D cultures, in real tissue scenario, most of the cells reside in microenvironment of different oxygen level and interact with the various other extra-cellular components affecting their radio-sensitivity. Interaction of cells with their microenvironment and subsequent alterations in cellular radio-/chemo-sensitivity has been reported in normal and tumor cells. The dynamic interaction and contribution of different components of extra-cellular matrix to their residing cells would determine the radiation sensitivity of cells. In further studies, effects of ionizing radiation on extra-cellular matrix modulated radiation survival, and adhesion/invasion was studied in glioblastoma cell lines, which showed a differential cellular radio-sensitivity in these tumor cells by fibronectin or matrigel<sup>1</sup>. It may be pertinent to mention the cellular response to radiation or drugs is associated with tissue architecture and hence, the sensitivity to cells grown in 2D conditions were found to be very different from cultures grown on three-dimensional (3D) matrix. Based on these observations, it may be concluded that cell culture in three dimensions is ideal to investigate radiation effects especially radiation-induced adaptive and bystander responses<sup>2</sup>. In another study, transgenic rodent cells exposed to high LET radiation (Fe-charged particles), showed higher mutation frequency in 3D samples than in 2D<sup>3</sup>. Moreover, the radiation damage to bystander cells and by different quality of radiation has been shown to be modified by architecture of cells<sup>4-6</sup>. Interaction of different mammary cell types of breast tissue exposed to low dose radiation response in a three-dimensional co-culture system suggest role of tissue microenvironment in radiation-induced carcinogenesis<sup>7</sup>.

Better understanding of the involvement of microenvironment and tissue architecture in modification of cellular radiation response would improve the experimental protocols<sup>8</sup> and the most importantly would orient thoughts based on integrated response of biological effects of radiation.

**B. N. Pandey, Editor**

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## 1. PROFILE of

### Dr. D. Bhattacharjee

Dr Dilip Bhattacharjee is a well reputed former scientist from Bhabha Atomic Research Centre (BARC), Mumbai, India. He joined BARC in April 1963 immediately after completion of his post-graduation from Calcutta University. During post-Graduation he was simultaneously carrying out research under a famous professor of avian endocrinology and he demonstrated for the first time the cellular site of glucocorticoid secretion in avian adrenal cortex, which is unlike mammalian adrenal cortex with clear zonation. He was a recipient of Atomic Energy Establishment Trombay (AEET) fellowship for the first time from Calcutta University (1960-1962) during post-graduate studies.



Dr Bhattacharjee was born at a little tea garden in Assam in 1939. After schooling at a Government school at Hailakandi, he joined Cotton College, Guwahati from where he passed B.Sc. (Hons.) securing second position in Guwahati University (1960).

Dr Bhattacharjee's initial research in BARC was to find out the basic mechanism of Atresia (a natural degenerating process of follicular cells) in mammalian ovary. With the help of biochemical, histochemical and autoradiographic techniques involving radiation, radioactive isotopes, he was succeeded in proposing a definite new mechanism of atresia in mammalian ovary for the first time. His *in vivo* research with surgically made inert uterine cells and thereafter hormonally induced synchronization of cell division showed that pre-synthetic cells are very sensitive to radiation doses in cell cycle. Once cells reach synthetic phase, progression of cell cycle continues unhindered even after radiation administration. His other research showed how frank hepatoma (liver cancer) is gradually formed by continuous treatment of a chemical, thiocetamide from a change initiated in selective liver cells. Besides he was responsible to prove that feeding irradiated wholesome food does not have any untoward effect in different tissues of mice.

Dr Bhattacharjee received doctorate degree (Ph.D.) in 1971 from University of Bombay for his research in Biochemistry. In 1973 he was awarded fellowship of International Atomic Energy Agency, Vienna to carry out research in peaceful uses of atomic energy in the field of Mammalian Radiation Biology in Oak Ridge National Laboratory (ORNL), USA. There he learned how stem cells are continually renewed to mature mammalian germ cells in male mouse and subsequently studied how this process is affected by radiation and different types of chemicals, such research activities he continued even after his return to BARC. He also reported radiation sensitivity under various experimental set up in mice ovaries leading to altered progeny. Most importantly he reported that only columnar cells in stage two of ovarian development were radiosensitive while epithelial cells were insensitive.

In 1983 Dr Bhattacharjee was offered a position of Gastwissenschaftler (visiting professor) for about two years for research on mammalian genetics at Gesellschaft für Strahlen-und Umwelt Forschung in Neuherberg, Germany. There he characterized many enzyme activity in mutants raised from parents administered either radiation or chemical.

At later years he has extensively reported from BARC how different types of congenital deformities are induced in the progeny by irradiating specific germ cells in either male or female paternal mice. One of the most significant results from his experimentations with low

dose radiation was delay and inhibition of radiation-induced carcinogenic process by prior exposure to a small dose of radiation. This is due to induction of adaptation by low dose radiation. It was remarked by international authorities that this confirmatory result showing inhibition of cancer induction by low dose irradiation was reported for the first time with *in vivo* experiments in mouse and have wider and significant applications. Dr. Bhattacharjee has also developed a transplantable tumour model from his experiments in mice with radiation, named as BARCL-95, lymphoma of BARC developed in 1995. This tumour model has since been in use for research to unravel many mysteries of cancer in human being.

After superannuation in 1999, Dr Bhattacharjee was invited as a visiting professor at Research Institute for Radiation Biology and Medicine (RIRBM) of Hiroshima University, Japan for two terms, six months each in 2000 and 2005 and as visiting scientist for a shorter duration in same years. In brief he has worked on tumorigenesis in infant mice exposed to tritiated water. It was proved that low metabolic excretion rate of tritium in selective organs of mice induces cancer. His research on mammary cancer concluded that methyl nitrosourea induced mammary tumours are inhibited by biochanin A and bisphenol A administered in infant rats. During his third trip to Japan he has mainly analyzed lime samples collected from various cancer prone areas of Northeast India which is consumed by people along with tobacco and pan there. From detailed analysis of results, it was concluded that radiation released from lime for long years consuming with pan and tobacco containing various radionuclides, caused excessive oral cancer in the population of northeast region in India.

In 2002 he went to Semipalatinsk State Medical Academy, Kazakhstan as a visiting scientist for a short duration, where he studied the incidence of radiation associated cancer from release of radiation from nuclear weapon testing site at Semipalatinsk by former USSR.

He has published all the research work cited above in peer reviewed national and international journals. He has more than 100 publications in journals, proceedings, DAE publications, news letter, and abstract book including review papers, and edited a book '**Radiobiological Concepts in Radiotherapy**', which is widely circulated. He has presented his research results in many national and international conferences abroad mostly on invitation. He has chaired many scientific sessions in both national and international meetings abroad.

Dr Bhattacharjee in addition was teaching in radiobiology course, BARC Training School for 5 years since 1975. He has evaluated Ph.D. theses and conducted examination for many universities in India. In 2004 he was conferred with a degree of D.Sc. (honoris causa) for his life long outstanding research activities by Faculty of Medical Studies affiliated for The Open International University for Complementary Medicine, Sri Lanka at convocation in Colombo.

He was connected with many scientific organizations as life member and was an elected member of the executive committee, general secretary and Vice-President of Indian Society for Radiation Biology from time to time. He has organized first '**International Symposium on Emerging Frontiers in Radiation Biology**' under auspices of ISRB in BARC in the year 1993 and an '**International Conference on Cancer-Research, Prevention and Treatment**' in a remote cancer prone place in northeast India, Silchar in the year 2003 along with an exhibition by Department of Atomic Energy for public awareness. He is founder Executive Editor of Indian Journal of Radiation Research.

Dr Bhattacharjee has been associated with many socio-cultural activities in Mumbai like International Lions club, SSM (NGO) and others as hon.-secretary, president, Chairman etc. from time to time.

Dr. Bhattacharjee is blessed with 3 children, elder daughter is a consultant gynecologist married to a neurosurgeon in Mumbai; son is a Ph.D. in surgery and now switched over to research relating to radiation and cancer and daughter-in-law, a medico pursuing research for Ph.D. in cancer hematology in Japan, and youngest daughter is a post-

graduate in computer sciences, now a home maker and son-in-law is a chemical engineer and an MBA, presently working in Hungary. Dr Bhattacharjee is blessed with two grand-daughters and two grand-sons. His wife is a post-graduate in Ancient Indian History and home-maker.

## **2. Tribute to**

### **Late Prof. A. L. Bhatia (Born: 1951, Died: April 16, 2009)**

Prof. A.L. Bhatia, Member of Executive Council of Indian Society for Radiation Biology (ISRB), passed away on 16<sup>th</sup> April, 2009 in a road accident when he was going to conduct a Ph. D. viva at Varelli (U.P). He was at 58. Dr. Bhatia belonged to Mathura (U.P) and he obtained his M.Sc. and Ph. D. degree in Zoology from University of Rajasthan, Jaipur. He had been working as Professor in Zoology Department since 2001. He contributed for his research on the effects of tritium in mammals. He worked in Germany from 1998 to 1991 as Alexander Von Humboldt Fellow and he continued his research work in Belgium also. He supervised 22 Ph. D thesis work in different areas of radiation biology. He was Young Scientist Awardee (Holland-1983) and Senior Scientist Travel Awardee (Australia-2003) during ICRR conferences. He was nominated as Scientist by Indian Government for Indo-Belgium exchange programme. He acted as Sectional President for 95<sup>th</sup> Indian Science Congress during the year 2007-08. He was the author of several books in the Zoology and Environment, and received national award on two books in 2003. Currently, he was working as Honorary Director of School of Life Sciences at University of Rajasthan. He was the Chief Editor for Asian Journal of Experimental Sciences. He was one of the most popular teacher and aurator in the campus. He left his wife and two sons behind him with a big void difficult to fill. Indian Society for Radiation Biology offers its heartfelt condolences to the bereaved family. May the departed soul rest in eternal peace.

By

**Dr. P.K. Goyal**, President-ISRB

Department of Zoology, Rajasthan University, Jaipur, India

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### 3. FROM ARCHIVES OF RADIATION SCIENCES

**Paper:** Dependence of the Radiation Response of an *in Vitro* Tumor Model on Cell Cycle Effects

**Source:** Cancer Research, 1973 Volume 33, pages 213-219

**Author:** Ralph E. Durand and Robert M. Sutherland

**Laboratory:** Ontario Cancer Treatment and Research Foundation, London Clinic, London 15, Ontario, Canada

**Highlights of the paper:** The paper investigated radiation effects in Chinese Hamster Ovary (CHO) cells cultured as 'spheroids'. This paper examined the radiation responses in terms of survival pattern and effects of cell cycle stages on irradiation-induced cell death. The growth kinetics of cells in spheroids was similar to that of many tumors, with exponential and plateau phases. These cells also showed components of cycling and non-cycling cells, and radio-resistant hypoxic cells.

**Significance of the paper:** This is one of seminal radiation biology paper investigating effects of ionizing radiation in 'spheroid' model of tumor. The paper signifies with understanding the role of (a) shape of tumor tissue, (b) cell cycle, (c) contact effects, in radiation response to tumor cells. The model also suggests that radiation effects in tumor cells could be greatly enhanced if the "contact effect" could be removed. The results suggested that cell cycle effects in organized tissues including tumors may be primarily responsible for their responses to different doses of irradiation, which may have implication in therapeutic efficacy of radiotherapy. The paper suggested 'spheroid' as an excellent *in vitro* model to understand effectiveness of chemotherapy in conjunction with radiotherapy.

by

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**Note:** Interested readers may submit the similar articles. This column is aimed to highlight the salient points and significance of a seminal research article/event in radiation biology and allied sciences, which has in further changed substantially the understanding in that particular research field.



## 4. NEWS AND VIEWS

### *Radiation and Cancer Biology*

- **Childhood exposure to external ionising radiation and solid cancer risk**  
<http://www.nature.com/bjc/journal/v100/n7/full/6604994a.html>
- **An inhibitor of NEDD8-activating enzyme as a new approach to treat cancer**  
Targeting the ubiquitin–proteasome system could provide new approach to treat human tumor cells  
<http://www.nature.com/nature/journal/v458/n7239/abs/nature07884.html?lang=en>
- **Tumours with PI3K activation are resistant to dietary restriction**  
<http://www.nature.com/nature/journal/v458/n7239/abs/nature07782.html?lang=en>
- **The cancer genome**  
<http://www.nature.com/nature/journal/v458/n7239/abs/nature07943.html?lang=en>
- **Cancer: When restriction is good**  
<http://www.nature.com/nature/journal/v458/n7239/full/458713a.html>
- **Cutting off cancer's supply lines**  
<http://www.nature.com/news/2009/090408/full/458686b.html>
- **Tumor detection and elimination by a targeted gallium corrole**  
<http://www.pnas.org/content/106/15/6105.abstract?etoc>
- **Methodological approaches in application of synthetic lethality screening towards anticancer therapy**  
<http://www.nature.com/bjc/journal/v100/n8/abs/6605000a.html>
- **Are the black women are at more risk of breast cancer?**  
<http://breast-cancer-research.com/content/11/2/R18>
- **Production of chemically programmed Antibodies *in vivo*: A new hope for Novel way to treat cancer and other infectious diseases**  
<http://www.nature.com/scibx/journal/v2/n10/full/scibx.2009.388.html>

- **Next generation oncology drug development: opportunities and challenges**  
<http://www.nature.com/nrclinonc/journal/v6/n5/abs/nrclinonc.2009.38.html?lang=en>
- **Propagation Distance of the  $\alpha$ -Particle-Induced Bystander Effect: The Role of Nuclear Traversal and Gap Junction Communication**  
<http://www.bioone.org/doi/abs/10.1667/RR1658.1>
- **Radioprotective effects of hesperidin against genotoxicity induced by  $\gamma$ -irradiation in human lymphocytes**  
<http://mutage.oxfordjournals.org/cgi/content/abstract/24/3/233?etoc>
- **Predominant modifier of extreme liver cancer susceptibility in C57BR/cdJ female mice localized to 6 Mb on chromosome 17**  
<http://carcin.oxfordjournals.org/cgi/content/abstract/30/5/879?etoc>
- **Oxidative stress-related genotypes, fruit and vegetable consumption and breast cancer risk**  
<http://carcin.oxfordjournals.org/cgi/content/abstract/30/5/777?etoc>
- **A Three-Dimensional Osteogenic Tissue Model for the Study of Metastatic Tumor Cell Interactions with Bone**  
<http://cancerres.aacrjournals.org/cgi/content/abstract/69/10/4097?etoc>
- **Enhancing the Antitumor Activity of Adriamycin and Ionizing Radiation**  
<http://cancerres.aacrjournals.org/cgi/content/abstract/69/10/4294?etoc>
- **Antioxidants prevent health-promoting effects of physical exercise in humans**  
<http://www.pnas.org/content/106/21/8665.abstract?etoc>
- **RNAi screen for rapid therapeutic target identification in leukemia patients**  
<http://www.pnas.org/content/106/21/8695.abstract?etoc>
- **Lung tumor promotion by curcumin**  
<http://carcin.oxfordjournals.org/cgi/content/abstract/30/6/1016?etoc>

- **Physiologic upper limit of pore size in the blood-tumor barrier of malignant solid tumors**  
<http://www.translational-medicine.com/content/7/1/51/abstract>
- **Titanium dioxide nanoparticles induce oxidative stress and DNA adduct formation but not DNA breakage in human lung cells**  
<http://www.particleandfibretotoxicology.com/content/6/1/17/abstract>

## ***Nuclear Technology & Safety***

- **Time for a concerted nuclear approach**  
<http://www.nature.com/nature/journal/v458/n7238/full/458549a.html>
- **Obama's nuclear-weapons-free vision**  
  
<http://www.nature.com/news/2009/090408/full/458684a.html>
- **Mistake in placement of radioactive implants resulted dose to non-diseased organs**  
Failed treatment of Prostate cancer during brachytherapy reported by New York Times, which resulted higher radiation dose to normal organs and poor therapy  
<http://www.nytimes.com/2009/06/21/health/21radiation.html>  
  
<http://www.nytimes.com/interactive/2009/06/20/us/0620-radiation.html>
- **The New Revolution for Energy: Is Nuclear Energy Better Alternative?**  
Wall Street Journal (Opinion)  
[http://online.wsj.com/article/SB124580572129645069.html#mod=to\\_days\\_us\\_opinion](http://online.wsj.com/article/SB124580572129645069.html#mod=to_days_us_opinion)
- **Dosimetric characterization of Gafchromic HD-810 film for mango irradiation**  
<http://rpd.oxfordjournals.org/cgi/content/abstract/133/4/208?etoc>
- **Evaluation of doses from ionising radiation to non-human species at Trombay, Mumbai, India**  
<http://rpd.oxfordjournals.org/cgi/content/abstract/133/4/214?etoc>
- **A new lead-free radiation shielding material for radiotherapy**  
<http://rpd.oxfordjournals.org/cgi/content/abstract/133/4/256?etoc>

- The radiocarbon signature of microorganisms in the mesopelagic ocean  
<http://www.pnas.org/content/106/16/6513.abstract?etoc>
- Funding cut for US nuclear waste dump  
<http://www.nature.com/news/2009/090429/full/4581086a.html>
- Going nuclear-Opportunities in nuclear industry  
<http://www.nature.com/naturejobs/2009/090507/full/nj7243-124a.html>
- North Korea's nuke test could have positive outcome  
<http://www.newscientist.com/article/dn17190-north-koreas-nuke-test-could-have-positive-outcome.html?DCMP=NLC-nletter&nsref=dn17190>
- Nuclear revival  
<http://www.nature.com/naturejobs/2009/090611/full/nj7248-877d.html>
- Bombers vs verifiers: A nuclear race worth winning  
<http://www.newscientist.com/article/mg20227143.900-a-nuclear-arms-race-worth-winning.html?DCMP=NLC-nletter&nsref=mg20227143.900>
- Solar ghosts may haunt Earth's radioactive atoms  
<http://www.newscientist.com/article/mg20227141.400-solar-ghosts-may-haunt-earths-radioactive-atoms.html?DCMP=NLC-nletter&nsref=mg20227141.400>
- Dealing with at-risk populations in radiological/nuclear emergencies  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/3-4/136?etoc>
- Polonium-210: lessons learned from the contamination of individual Canadians  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/3-4/164?etoc>
- Factors that elevate the internal radionuclide and chemical retention, dose and health risks to infants and children in a radiological–nuclear emergency  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/3-4/167?etoc>
- Dosimetry study for  $\beta$ -radiation treatment of in-stent restenosis  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/1/49?etoc>
- Estimating the lung burden from exposure to aerosols of depleted uranium  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/1/23?etoc>

- Study of contents of  $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$  in fertilisers

<http://rpd.oxfordjournals.org/cgi/content/abstract/134/1/62?etoc>

- Thorium-induced neurobehavioural and neurochemical alterations in Swiss mice

[http://www.informaworld.com/smpp/content~content=a910751656~db=all?jump\\_type=alert&alert\\_type=new\\_issue\\_alert,email](http://www.informaworld.com/smpp/content~content=a910751656~db=all?jump_type=alert&alert_type=new_issue_alert,email)

## ***Science and Society***

- Could your trashcan solve the energy crisis?

<http://www.newscientist.com/article/mg20227051.500-zapping-rubbish-into-ecofuel.html?DCMP=NLC-nletter&nsref=mg20227051.500>

- The five greatest mysteries of antimatter

<http://www.newscientist.com/article/mg20227051.600-why-we-never-make-an-antimatter-bomb.html?DCMP=NLC-nletter&nsref=mg20227051.600>

- Impact of changes in diffuse radiation on the global land carbon sink

<http://www.nature.com/nature/journal/v458/n7241/abs/nature07949.html?lang=en>

- The most influential journals: Impact Factor and Eigenfactor

<http://www.pnas.org/content/106/17/6883.extract?etoc>

## 5. LETTERS FROM THE READERS

- Many congratulations for bringing new issue of **Radiation Science Today**. I am sure that many of the research scientist & students working in the field of Radiation & Cancer Biology would find this issue, like previous ones, very much useful. Each issue of Radiation science today is a treasure of all the important scientific information, related to radiation Sciences, complete report of meeting /workshop, forthcoming conference, recent books, useful links etc. On my personal behalf & on behalf of ISRB, I once again congratulate for such a fabulous efforts and outstanding work. I am very much confident that such e newsletters would be the milestones for Indian Society for Radiation Biology.  
-**Prof. P. K. Goyal**, President ISRB, Dept. of Zoology, Rajasthan University, Jaipur
- It is a remarkable job of bringing out the eNewsletter containing all the needed information regarding recent articles, journal links, recent news, forthcoming conference and very good addition of profile of outstanding radiobiologists and their contribution to the field. Though I personally know Dr. Uma Devi, met and interacted on many occasion but never know that she is qualified Hypnotherapist. It is lot of hard work and making it a regular issue with lots of information.

RADIATION SCIENCE TODAY

INDIAN SOCIETY FOR RADIATION BIOLOGY

### 1. PROFILE of

#### Prof P. Uma Devi

Professor P. Uma Devi obtained her B.Sc. and M. Sc degrees from the Kerala University and Ph. D. degree from the University of Rajasthan, Jaipur. She served as Lecturer and Reader in the Department of Zoology, University of Rajasthan, Jaipur from 1968-1985. She was invited as Professor at the Kasturba Medical College, Manipal, in 1985, where she established and headed the Department of Radiobiology, the first of its kind in the country and was recognized as one of the major radiobiology research centres in India. After retirement from there in 2001, she was offered a position as Professor



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-**Dr. Arun Chougule**, Department of Radiotherapy, SMS Medical College, Jaipur, India

- I got the newsletters. It is a nice work.  
-**Dr. Mansoor M. Ahemad**, Department of Radiation Oncology, University of Miami, Miami, Florida, USA
- I am reading the enewsletter regularly which gives an insight of the activities of ISRB as well as news about latest developments in the field of radiobiology.  
-**Dr. S.C. Jain**, Centre for Fire, Explosive & Environment Safety, Brig. S.K. Mazumdar Marg, Delhi

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## 6. REPORT OF MEETINGS/EVENTS ORGANIZED BY ISRB

### INTERNATIONAL CONFERENCE ON RADIATION BIOLOGY & TRANSLATIONAL RESEARCH IN RADIATION ONCOLOGY, Jaipur, November 10-12, 2008

We are pleased to mention that Meeting Report of ICRB-2008 has been published in **Molecular and Cellular Pharmacology, 2009**. Following are the details:

Meeting Report

Molecular and Cellular Pharmacology

### Novel Translational Research Concepts and Strategies in Radiation Oncology

Seema Gupta<sup>1</sup>, P. K. Goyal<sup>2</sup> and Mansoor M. Ahmed<sup>1</sup>

<sup>1</sup>Department of Radiation Oncology, University of Miami, Miami, Florida; <sup>2</sup>Radiation & Cancer Biology Laboratory, Department of Zoology, University of Rajasthan, Jaipur, India

Meeting Report on International Conference on Radiation Biology and Translational Research in Radiation Oncology (ICRB-TRRO) held November 10-12, 2008 in Jaipur, India.

Mol Cell Pharmacol 2009;1(2):103-111.

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## 7. UPCOMING CONFERENCE & WORKSHOP OF ISRB

### *International Conference on Radiation Biology 2010*

International Conference on Radiation Biology, 2010 (ICRB-2010) would be organized at Shri Ramachandra Medical College and Research Institute, Shri Ramachandra University, Porur, Chennai (Madras), India. The Conference would provide unique opportunity to participants for scientific presentations and interaction with eminent scientists from India and abroad. In addition, Chennai and surroundings cities, are famous for its historical monuments, temples, traditional culture, and are attractive tourist sites in India.

**Date of Conference:** To be announced, likely to be in Nov. 2010

**Abstract submission deadline:** To be announced

**Registration deadline:** To be announced

#### **Awards:**

**Indian Society for radiation Biology (ISRB)** has the following awards. Details would be announced in due course of time.



- **Life time Achievement Award** : 1
- **M. R. Raju Award** : 1
- **Young Scientists Award** : 3
- **Poster Award** : 5

**Contact Person:** Dr Solomon F.D. Paul, Email: [wise\\_soly@yahoo.com](mailto:wise_soly@yahoo.com)

For more details, abstract submission, registration and time to time update about the Conference please contact on the email or see update in upcoming issues of eNewsletter.

## 8. UPCOMING MEETINGS/ WORKSHOPS

- **IEEE Nuclear and Space Radiation Effects Conference**  
July 20-24, 2009, Québec City, Canada <http://nsrec.com/>
- **10<sup>th</sup> International Conference on Environmental Mutagens (ICEM)**  
August 20-25, 2009, Firenze, Italy  
  
<http://www.icem2009.org/eems/conference09/default.csp>
- **37<sup>th</sup> Annual Meeting European Radiation Research Society**  
August 26-29, 2009, Prague, Czech Republic  
<http://www.err09.org/>
- **World Congress 2009 on Medical Physics and Biomedical Engineering**  
September 7–12, 2009, Munich, Germany  
  
<http://www.wc2009.org/World-Congress-2009/Pages/Home.aspx/>
- **8<sup>th</sup> International LOWRAD Conference “The Effects of Low Doses and Very Low Doses of Ionizing Radiation on Human Health and Biotopes”** September 28 – 30, 2009, Rio de Janeiro, Brazil,  
  
[www.lowrad2009.ird.gov.br](http://www.lowrad2009.ird.gov.br)
- **55<sup>th</sup> Annual Meeting of Radiation Research Society**, Savannah, GA. October 3–7, 2009.  
[www.radres.org/ECOMradres/timssnet/common/tnt\\_frontpage.cfm](http://www.radres.org/ECOMradres/timssnet/common/tnt_frontpage.cfm)
- **Frontiers in Basic Cancer Research**, October 8-11, 2009, Boston, MA  
  
**Abstract submission deadline: August 10, 2009**  
  
[www.aacr.org/page17072.aspx](http://www.aacr.org/page17072.aspx)
- **15<sup>th</sup> International Symposium on Microdosimetry**  
October 25-30, 2009, Verona, Italy  
<http://agenda.infn.it/conferenceDisplay.py?confId=914>

- **American Society for Radiation Oncology (ASRO) 51st Annual Meeting**, November 1-5, 2009, Chicago, IL.  
<http://www.astro.org/Meetings/AnnualMeetings/>
- **Transcriptional Mechanisms of Early Lymphocyte Development Symposium**, The Salk Institute, La Jolla, California November 5-6, 2009  
<http://www.abcam.com/go.cfm?v=6194208&p=3863>
- **16<sup>th</sup> Annual Meeting Society for Free Radical and Radiation Biology and Medicine (SFRBM)**, November 18 - 22, 2009: San Francisco, CA.  
[www.sfrbm.org/annualMeetings.cfm](http://www.sfrbm.org/annualMeetings.cfm)
- **International Symposium on Emerging Trends in Biomedical and Nanobiotechnology: Relevance to Human Health**, Acharya Nagarjuna University, Guntur, India December 19-21, 2009, Contact Person: Prof.K.R.S.Sambasiva Rao, Director, Centre for Biotechnology, Acharya Nagarjuna University, Nagarjunanagar - 522 510, Guntur, A.P., India, Email- [krssrao@yahoo.com](mailto:krssrao@yahoo.com)
- **Gordon Research Conferences in 2009**  
<http://www.grc.org/>
- **9<sup>th</sup> International Microbeam Workshop, July 15-17, 2010, Darmstadt, Germany**  
  
[https://www.gsi.de/forschung/bio/conferences/microbeam9\\_e.html](https://www.gsi.de/forschung/bio/conferences/microbeam9_e.html)
- **International Conference on Radiation Biology, 2010 (ICRB-2010)**, Shri Ramachandra Medical College and Research Institute, Shri Ramachandra University, Porur, Chennai (Madras), India

**Date of Conference:** To be announced, likely to be in Nov. 2010

**Abstract submission deadline:** To be announced

**Registration deadline:** To be announced

**Contact Person:** Dr Solomon F.D. Paul, Email: [wise\\_soly@yahoo.com](mailto:wise_soly@yahoo.com)

- **14<sup>th</sup> International Congress for Radiation Research 2011**, August 2011 in Warsaw, Poland.  
[http://www.ptbr.org.pl/icrr2011/icrr2011\\_venue.htm](http://www.ptbr.org.pl/icrr2011/icrr2011_venue.htm)

**Important Notice:** Are you organizing any Workshop/Meeting related to Radiation Research or in related research areas? You can add the announcement of event to this eNewsletter **free of cost!!** The announcement would reach to ISRB Community as well many more in India and abroad. The details of announcement may be communicated to: [isrb\\_enewsletter@yahoo.co.in](mailto:isrb_enewsletter@yahoo.co.in)

## 9. AWARDS/HONORS TO ISRB MEMBERS

Name of the ISRB Member	Affiliation	Award/Honors	Year/Period
Dr B. N. Pandey	Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai 400 085, India	<b>Young Scientist Award</b> by Asian Association of Radiation Research for outstanding contribution in Radiation Research.  The Award was conferred during Second Asian Congress of Radiation Research, Seoul, S. Korea, May 17-20, 2009	2009
Dr B. N. Pandey	Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai 400 085, India	<b>Best Poster Award</b> by during Second Asian Congress of Radiation Research, Seoul, S. Korea, May 17-20, 2009 for abstract ' <i>Role of Oxidative Stress and Apoptotic Death in Radiation Induced Bystander Effect in Human Normal and Tumor cells with Implications to improvement in Cancer Radiotherapy</i> ' by B. N. Pandey, A. Kumar, M. Ali and K. P. Mishra	2009

## 10. CAREER FORUM

### *Positions and Fellowships*

- **NIH Director's New Innovator (DP2) Award program** to support new investigators of exceptional creativity, which have the potential to produce a major impact on broad, important problems in biomedical and behavioral research. For more information visit the link <http://nihroadmap.nih.gov/newinnovator/> and to view the 2009 Program Announcement <http://grants.nih.gov/grants/guide/pa-files/PA-09-013.html>.
- **POSITION VACANT for Senior Lecturer / Assistant Professor Field of specialization: Radiation Biology / Toxicology**

**Job Description:** Applications are invited for faculty positions at the level of Senior Lecturer and Assistant Professor in the areas of Radiation biology / Toxicology at Manipal Life Sciences Centre, Manipal a constituent institution of Manipal University.

The responsibilities include establishing a successful extramurally supported research program, teaching radiobiology and biotechnology.

The candidates with Ph.D. or equivalent degree in an associated field are eligible for the above said position. Candidates with Radiation biology / Toxicology background with hands-on experience in molecular biology techniques are preferred. The successful candidate will join the Radiobiology & Toxicology division focusing on basic and translational research in Radiobiology and Toxicology. Positions are open until it is filled. Interested applicants may submit their detailed CV to: **The Deputy Registrar**, HR, Manipal University, Manipal 576 104, Karnataka, India, Email: jobs@manipal.edu

- **Post doctoral Fellowship**

<http://www.nature.com//naturejobs/science/jobs/53406>

- **Postdoctoral position in immunology**

<http://www.nature.com/naturejobs/science/jobs/61323>

- **Postdoctoral Fellowship in Stem Cell Biology**

<http://www.nature.com//naturejobs/science/jobs/56183>

- **Postdoctoral Fellow - Cell Signalling**

<http://www.nature.com//naturejobs/science/jobs/63000>

- **Postdoctoral Fellowships for Training in Cancer Research**

International Agency for Research on Cancer

Fellowships for junior scientists working in medical or allied sciences and, who wish to pursue their career in cancer research

<http://www.iarc.fr/ENG/Fellowships/postdoc.php>

- **Postdoctoral Research Fellowship**

Post Doctoral Fellowship at MGH/Harvard Medical School, Boston, MA, USA to investigate DNA damage checkpoint signaling is regulated by epigenetic mechanisms, novel protein modifications and targeted protein degradation and investigate how the checkpoint can be exploited in targeted cancer therapy.

<http://www.nature.com/naturejobs/science/jobs/84411>

- **INRA is recruiting engineers and technicians, scientists**

[http://www.international.inra.fr/join\\_us](http://www.international.inra.fr/join_us)

- **NSBRI Postdoctoral Fellowship Program soliciting applications**

The National Space Biomedical Research Institute (NSBRI) is soliciting applications for its Postdoctoral Fellowship Program. Two-year fellowships are available in any U.S. laboratory carrying out space-related biomedical or biotechnological research that supports the NSBRI's goals. NSBRI research addresses and seeks solutions to the various health concerns associated with long-duration human space exploration.

Applicants must submit proposals with the support of a mentor and institution, and all proposals will be evaluated by a peer-review panel. The program is open to U.S. citizens, permanent residents, or persons with pre-existing visas obtained through their sponsoring institutions that permit postdoctoral training for the project's duration.

Detailed program and application submission information is available on the NSBRI Web site at [www.nsbri.org/Announcements/rfa09-01.html](http://www.nsbri.org/Announcements/rfa09-01.html). Notices of intent and applications must be submitted through the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES). Notices of intent are due July 7, 2009, and the application **deadline is August 4, 2009**.

Questions may be directed to David A. Watson, Ph.D., NSBRI Postdoctoral Fellowship Program, email: [postdoc@www.nsbri.org](mailto:postdoc@www.nsbri.org), or phone: 713-798-7412.

## ***Grants and Awards***

- Looking for **Grants, Funds, Fellowships** related to **Radiation Research**, visit the Radiation Research Web page or following link

[http://www.radres.org/ECOMradres/timssnet/common/tnt\\_JobsFundingandFellowships.cfm](http://www.radres.org/ECOMradres/timssnet/common/tnt_JobsFundingandFellowships.cfm)

- **Pre- and Post Doctoral Fellowships from NIH**  
<http://grants.nih.gov/training/extramural.htm>
- **AACR-Gertrude B. Elion Cancer Research Award**  
<http://www.aacr.org/default.aspx?p=3859>
- **AACR Career Development Awards**  
<http://www.aacr.org/default.aspx?p=3858>
- **AACR seeks nominations of outstanding scientists for prestigious Landon-AACR Prizes for Basic & Translational Cancer Research.**  
Call for nominations now open through August 25, 2008  
For information, visit <http://www.aacr.org/page13893.aspx>
- **Science Foundation Ireland, (SFI)**

The national foundation for excellence in scientific research is investing in academic researchers and research teams who are most likely to generate new knowledge, leading edge technologies, and competitive enterprises.  
[www.sfi.ie](http://www.sfi.ie)

## *Article related to career issues*

- The issues of translation and tough choices in science careers.

<http://www.nature.com/naturejobs/2008/080731/full/nj7204-661a.html>

- Careers Away from the Bench

[http://sciencecareers.sciencemag.org/tools\\_tips/outreach/away\\_from\\_the\\_bench\\_booklet](http://sciencecareers.sciencemag.org/tools_tips/outreach/away_from_the_bench_booklet)

- Support for Tenure-Track Jobs in Biomedical Sciences

<http://www.sciencemag.org/cgi/content/summary/324/5923/27a>

- Japan's postdocs open to alternative work

<http://www.nature.com/naturejobs/2009/090423/full/nj7241-1062a.html>

- Biotech job projections bleak

<http://www.nature.com/naturejobs/2009/090423/full/nj7241-1062b.html>

- Take a scientist to work?

<http://www.nature.com/naturejobs/2009/090423/full/nj7241-1063b.html>

- Going nuclear-Opportunities in nuclear industry

- <http://www.nature.com/naturejobs/2009/090507/full/nj7243-124a.html>

- Nuclear revival

<http://www.nature.com/naturejobs/2009/090611/full/nj7248-877d.html>

## *Important Web Sites*

- AACR Research Fellowships

<http://www.aacr.org/default.aspx?p=3860>

- *GrantsNet* is resource to find funds for training in the sciences and undergraduate science education. Through the support of HHMI and AAAS, this service is completely free.

[http://www.grantsnet.org/start.cfm?session\\_id=844615](http://www.grantsnet.org/start.cfm?session_id=844615)

- **Naturejobs** the career magazine from Nature with the hottest science jobs and details of career related issues.

<http://www.nature.com/naturejobs/index.html>

- **Post Doc Jobs**, a site providing opportunities about Post Doc Jobs. It is a platform to bring students, Professionals and Research Institutes together.

<http://www.postdocjobs.com/>

- **Science's Next Wave** is a weekly online publication that covers scientific training, career development, and the science job market. *Next Wave* is published by *SCIENCE* magazine and the American Association for the Advancement of Science.

<http://nextwave.sciencemag.org/?CFID=789744&CFTOKEN=78870222>

- The National Academy of Sciences offers Research Associateship Awards to doctoral level scientists and engineers (US and foreign nationals). For more information go to

<http://sites.nationalacademies.org/pga/RAP/index.htm>

**Important Notice:** If you have any vacancy in your laboratory/Institute, you can advertise the post through this eNewsletter. In addition, any award in these fields may be also announced. **It is absolutely free!!** The advertisement would reach to Members of ISRB and many more, who may be interested about the vacancy. The details of vacancy may be communicated to: [isrb\\_enewsletter@yahoo.co.in](mailto:isrb_enewsletter@yahoo.co.in).

## 11. ARTICLES OF THE ISSUE

- **Bcl-2 inhibitors: small molecules with a big impact on cancer therapy**  
<http://www.nature.com/cdd/journal/v16/n3/full/cdd2008137a.html>
- **Radiation-induced bystander signalling in cancer therapy**  
<http://www.nature.com/nrc/journal/v9/n5/abs/nrc2603.html?lang=en>
- **Dicentric chromosomes and  $\gamma$ -H2AX foci formation in lymphocytes of human blood samples exposed to a CT scanner: a direct comparison of dose response relationships**  
<http://rpd.oxfordjournals.org/cgi/content/abstract/134/1/55?etoc>
- **Effects of low fluences of radiations found in space on cellular systems**  
<http://www.informaworld.com/smpp/content~db=all~content=a910577917>



- **Cancer stem cells and radiotherapy**

<http://www.informaworld.com/smpp/content~db=all~content=a910578057>

- **Ionising radiation and cancer risks: What have we learned from epidemiology?**

<http://www.informaworld.com/smpp/content~db=all~content=a910782193>

## 12. OPEN ACCESS ARTICLES/SERIES OF ARTICLES

### ARTICLES SERIES

- **Free Access to Featured *Cell Research* Articles**

Featured articles cover topics including but not limited to: apoptosis, stem cells, cell growth and differentiation, signal transduction, immunology, neurosciences and much more!

[http://www.nature.com/content/cr/best\\_of/index.html](http://www.nature.com/content/cr/best_of/index.html)

- **Articles on anti-angiogenesis therapy in cancer**  
[http://www.nature.com/nrc/focus/targeting\\_ang/index.html](http://www.nature.com/nrc/focus/targeting_ang/index.html)
- **Development of RNAi as a therapeutic strategy**

Open access articles on RNAi in basic issues and therapeutic applications

<http://www.nature.com/mt/webfocus/rnai/index.html>

- **Cell Signaling Articles**

Cell Research presents a series of reviews on signal transduction in the context of stem cell self-renewal and differentiation, cancer and other human diseases.

[http://www.nature.com/cr/focus/cell\\_signaling\\_review.html](http://www.nature.com/cr/focus/cell_signaling_review.html)

- ***Bone Marrow Transplantation* delivers articles in areas:**

Hematopoietic stem cell transplantation, stem cell biology, transplantation immunology, kinetics and cytokine control, HLA and matching techniques, translational research, clinical results.

Visit [www.nature.com/bmt](http://www.nature.com/bmt)

- **Insights archive from Nature**

<http://www.nature.com/nature/supplements/insights/>

- **Focus on TGF $\beta$  SIGNALING**

[http://www.nature.com/cr/focus/tgf\\_signaling\\_review.html](http://www.nature.com/cr/focus/tgf_signaling_review.html)

- **Bulking up immunity with instant Abs**

<http://www.nature.com/scibx/journal/v2/n10/full/scibx.2009.388.html>

- **Nature collections on Cancer**

<http://www.nature.com/nature/supplements/collections/cancer/>

## **ARTICLES**

- **Targeting the ubiquitin system in cancer therapy**

<http://www.nature.com/nature/journal/v458/n7237/abs/nature07960.html?lang=en>

- **A multi-marker assay to distinguish malignant melanomas from benign nevi**

<http://www.pnas.org/content/106/15/6268.abstract?etoc>

- **Notch and Wnt signals cooperatively control cell proliferation and tumorigenesis in the intestine**

<http://www.pnas.org/content/106/15/6309.abstract?etoc>

- **Triple-negative breast cancers are increased in black women regardless of age or body mass index**

<http://breast-cancer-research.com/content/11/2/R18>

- **Biomarkers of response and resistance to antiangiogenic therapy**

<http://www.nature.com/nrclinonc/journal/v6/n6/abs/nrclinonc.2009.63.html?lang=en>

- **Therapeutic resistance**

<http://www.nature.com/nrc/series/therapeutic/index.html>

- **Breast cancer stem cells: tools and models one can rely on**

<http://www.biomedcentral.com/1471-2407/9/202/abstract>

- **Physiologic upper limit of pore size in the blood-tumor barrier of malignant solid tumors**

<http://www.translational-medicine.com/content/7/1/51/abstract>

- **Effects of low fluences of radiations found in space on cellular systems**

<http://www.informaworld.com/smpp/content~db=all~content=a910577917>

- **Cancer stem cells and radiotherapy**

<http://www.informaworld.com/smpp/content~db=all~content=a910578057>

- **Ionising radiation and cancer risks: What have we learned from epidemiology?**

<http://www.informaworld.com/smpp/content~db=all~content=a910782193>

*Note: Some of the open access articles are only for limited period.*

## 13. USEFUL LINKS

- **Radiation Research Podcast**

You can listen, the telephone interviews to author(s) of selected paper published each month from the latest issue of international scientific journal ***Radiation Research***, official journal of the Radiation Research Society. In addition, you can also listen, the interviews by eminent scientists in radiation research about the current topics. Log on to

<http://lsmr1.lbl.gov:8080/xwiki/bin/view/Radiation+Research+Society/>

**Or Look for Journal Podcast under category 'Journal' and then 'Journal Podcast' on following web page**

<http://www.radres.org/podcast/>

**Or Look for 'Radiation Research Podcast' in Google Search**

- **Radiation Research Society SIT Discussion Board**

Another site, which may attract you to get information related to Scientific Meetings, vacancies and discussion in Radiation Sciences.

<http://www.radres.org/ECOMradres/timssnet/phpBB2/index.php>

- **Science's Next Wave** is a weekly online publication that covers scientific training, career development, and the science job market. *Next Wave* is published by *SCIENCE* magazine and the American Association for the Advancement of Science.

<http://nextwave.sciencemag.org/?CFID=789744&CFTOKEN=78870222>

- **Link to related other Professional / Academic Societies related to Radiation Biology and Oncology**

[http://www.radres.org/ECOMradres/timssnet/common/tnt\\_RelatedSocieties.cfm](http://www.radres.org/ECOMradres/timssnet/common/tnt_RelatedSocieties.cfm)

- **Nuclear India**

A publication by Department of Atomic Energy, Government of India about nuclear energy and various other related issues

<http://www.dae.gov.in/ni/nimain.htm>

## 14. IMPORTANT JOURNALS

- **Annals of Oncology**

<http://annonc.oxfordjournals.org/>

- **Acta Oncologia**

<http://www.informaworld.com/smpp/title~content=g779470932~db=all>

- **BMC Cancer**

<http://www.biomedcentral.com/bmccancer/>

- **Cancer Epidemiology Biomarkers & Prevention**

<http://cebp.aacrjournals.org/>

- **Cancer Prevention Research**

<http://cancerpreventionresearch.aacrjournals.org/>

- **Cancer Research**

<http://cancerres.aacrjournals.org/>

- **Cell Growth and Differentiation**

<http://cgd.aacrjournals.org/>

- **Clinical Cancer Research**

<http://clincancerres.aacrjournals.org/>

- **Clinica Chimica Acta**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/506018/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/506018/description#description)

- **Free Radical Biology and Medicine**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/525469/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/525469/description#description)

- **Free Radical Research**

<http://www.tandf.co.uk/journals/authors/gfrauth.asp>

- **Indian Journal of Radiation Research**

For manuscript submission and, subscription and free sample copy of the Journal contact, Editor: Dr K. P. Mishra, Email: [mishra\\_kaushala@rediffmail.com](mailto:mishra_kaushala@rediffmail.com), Assistant Editor: Dr. H. D. Sarma Email: [hdsarma1162@yahoo.com](mailto:hdsarma1162@yahoo.com)

- **International Journal of Radiation Biology**

<http://www.informaworld.com/smpp/title~content=t713697337>

- **International Journal of Radiation Oncology, Biology and Physics**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/525471/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/525471/description#description)

- **Iranian Journal of Radiation Research**

<http://www.ijrr.com/>

- **Journal of Cancer Research and Therapeutics**

<http://www.cancerjournal.net/>

- **Journal of Radiation Research**

[http://www.journalarchive.jst.go.jp/english/jnltop\\_en.php?cdjournal=jrr1960](http://www.journalarchive.jst.go.jp/english/jnltop_en.php?cdjournal=jrr1960)

- **Molecular Cancer Research**

<http://mcr.aacrjournals.org/>

- **Molecular Cancer Therapeutics**

<http://mct.aacrjournals.org/>

- **Radiation Measurements**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/286/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/286/description#description)

- **Radiation Oncology**

<http://www.ro-journal.com/>

- **Radiation Physics and Chemistry**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/331/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/331/description#description)

- **Radiation Protection Dosimetry**

<http://rpd.oxfordjournals.org/>

- **Radiation Research**

<http://www.rrjournal.org/perlserv/?request=get-archive>

- **Radiotherapy and Oncology**

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/506042/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/506042/description#description)

## 15. RECENT BOOKS

- **Cancer and the Search for Selective Biochemical Inhibitors**

by E J Hoffman, Publisher: CRC Press, 2007; 2<sup>nd</sup> Edn.

<http://www.nature.com/bjc/journal/v100/n7/abs/6604993a.html>

- **Antiangiogenic Cancer Therapy**

<http://www.nature.com/bjc/journal/v100/n9/abs/6605032a.html>

- **The Long Shadow: Nuclear Weapons and Security in 21st Century Asia**

by Muthiah Alagappa, Publisher: Stanford University Press: 2008.

<http://www.nature.com/nature/journal/v458/n7238/full/458574a.html>

- **Regenerative Medicine: Stem Cells and their Applications**

By K.R.S. Sambasivarao and K. Ananda Krishna

**Publisher:** IK International Publishing House Pvt. Ltd., A-25 Green Park Extension, Uphaar Cinema Market, New Delhi 110 016, [info@ikinternational.com](mailto:info@ikinternational.com), **Website:** - [www.ikbooks.com](http://www.ikbooks.com)

### Contents

Chapter 1: Introduction to Regenerative Medicine

Chapter 2: Embryonic stem cells

Chapter 3: Adult stem cells

Chapter 4: Stem cell transplant: Role of cord blood

Chapter 5: Ethical concerns, challenges, recommendations and current regulation of human stem cell research

Chapter 6: Cell cycle regulation

Chapter 7: Stem cell therapy

Chapter 8: Gene therapy and tissue engineering

Chapter 9: Techniques in regenerative medicine



## 16. NOTICE BOARD

- **Update your email and contact address**

Dear Members of ISRB,

The enewsletter would be send to ISRB Members by email only. If your email address is getting changed or you have any other preferred email, please communicate to us as soon as possible on [isrb\\_enewsletter@yahoo.co.in](mailto:isrb_enewsletter@yahoo.co.in). In case, any other ISRB Member, who is not receiving eNewsletter, please intimate us his/her email address.

In addition, if any other friend or colleague is interested to receive the eNewsletter, please let us know his/her email address to be included in our mailing list. The eNewsletter is free to ISRB Members as well as non-Members too. **The subscription of eNewsletter is absolutely free!!!**

In addition, it is frequent problem to communicate with ISRB members due to change in address. If your contact address has been changed please intimate to Secretary, ISRB. This would help us to reach you and communicate, when ever needed.

- **Join ISRB**

**Are you/your colleague/friend working in Radiation Research or related field and still not a Member of Indian Society for Radiation Biology? Join ISRB.**

As Member of ISRB, (a) you would join with scientific community working in Radiation Research and related research areas. (b) You are entitled to participate in Meeting/Workshops of ISRB at reduced Registration Fee (c) Your interaction with Scientists and experts from India and abroad would help in your career.

To be a Member of ISRB, fill the attached application form (in last of eNewsletter) along with Membership fee to Secretary, ISRB. For details, contact Secretary or any of the Office Bearers of ISRB as given below.

The application form can be download from following link <http://www.freewebs.com/isrbnewsletter/ISRB%20Membership%20Application%20Form.pdf>

- **Awards / Honors to ISRB Members**

Editorial Board 'Radiation Science Today' is pleased to launch a new column "**AWARDS/HONORS to ISRB Members**". We hope the column would make us

more aware with each other about our awards/ scientific achievements.

**This column is only for Members of Indian Society for Radiation Biology.** If you are Member of ISRB and received any award or scientific honor, you are requested to send details of same in following format on email address: [isrb\\_enewsletter@yahoo.co.in](mailto:isrb_enewsletter@yahoo.co.in), with **subject line:** Awards/Honors.

To avoid the verification of Membership and any ambiguity from non-ISRB Members, a line of statement is requested that 'I am a Member / Life Member of Indian Society for Radiation Biology'.

Details of award or scientific recognition can be submitted in prescribed format provided below as when received, which would be included in next upcoming issue of the eNewsletter.

Please circulate the announcement to your colleagues and friends, who are Members of ISRB. Please provide complete information to avoid unnecessary delay in publication in eNewsletter.

<b>Name and Present Address of ISRB Member</b>	<b>Affiliation (if any)</b>	<b>Name of Award/Honor</b>	<b>Year/Period</b>

**Statement:** I am Member/Life Member of Indian Society for Radiation Biology.

Name of the ISRB Member:

- You can contribute in this eNewsletter**

You can send your contribution, which may be included in this eNewsletter under '**Reader's Column**'

Brief scientific article (maximum 1000 words, if reference needed, in 'International Journal of Radiation Biology' style) may be submitted for publication in eNewsletter. Your article may fall under following subject category: (i) radiation sciences or related research areas; (ii) your opinion on any scientific issue, technique or some general topics; (iii) any major finding or research concept from the archives of radiation sciences. The article should be original. It would be published in eNewsletter after general screening/reviewing of the article by the Editorial Board.

For any further clarification or submission of any article write to Editor on email address: [isrb\\_enewsletter@yahoo.co](mailto:isrb_enewsletter@yahoo.co)

In addition, if you come across any recent journal / books published in radiation and related research areas, please send us the details of the book/journal on our

email: [isrb\\_enewsletter@yahoo.co](mailto:isrb_enewsletter@yahoo.co). The details of books/journal would be included in the eNewsletter **free of cost!!!**

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(Regd. No. 5-19927, dt. May 5, 1989)

H.O.: Institute of Nuclear Medicine &amp; Allied Sciences, Lucknow Road, New Delhi-110 054

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To:

Secretary

Indian Society for Radiation Biology (ISRB)

Dear Sir,

I wish to apply for Life/ Annual/Membership for the Indian Society for Radiation Biology. My particulars are given below:

1. Full Name (Block Letters)

.....

2. Present Position/Title

.....

3. Date of Birth ...

.....

4. Academic qualifications:

DegreeUniversityYear

.....

.....

.....

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.....

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5. Field of Specialization

.....

6. Research Interest

.....

.....

7. Address: Official:

.....  
.....  
.....

Tel... ..Fax: ..... E-mail

.....

Permanent

.....

8. Registration Fee:      Annual Membership      : Rs. 100.00      Foreign members: US\$ 10  
   Life Membership      : Rs 1000.00      Foreign members: US\$ 100

Bank transfer/Draft/Cheque No. ....Date: .....Drawn on Bank. ....

.....in favour of 'Indian Society for Radiation Biology' is enclosed.

Place: ..... Date:..... Signature: .....

Proposed by .....Membership No. and Signature .....

Seconded by ..... Membership No. and Signature .....

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### ***For Use of ISRB Secretariat Only***

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Membership approved/not approved by Executive Council in its meeting held

on.....

Payment received vide ..... on

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Secretary/Treasurer: .....

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