RADIATION SCIENCE TODAY

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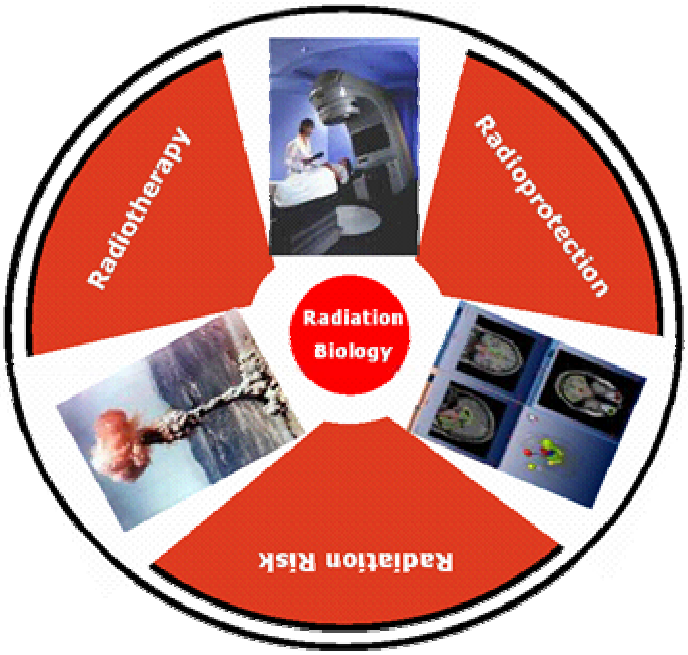

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Radiation Science Today

January-March, 2010 **Issue:** 9 **Year:** 2010

Happy New Year 2010 to all the readers!

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EDITORIAL

Top Inventions that Changed the World-Radiation science bagged the first!

On behalf of editorial board, let me wish all the readers greetings for festive season and happy new year 2010.

Radiation science has glorious past adorned with many inventions and concepts that have tremendous impact on many arenas of our life- health/hygiene, power, industries, agriculture, food safety etc. In the series of many prestigious prizes in past, radiation science was also recently stamped for having top most invention in its treasure that changed the world significantly. In June 2009, Science Museum of London, received public voting (50,000 votes) for ten objects in its collection that curators selected for their biggest mark in history. It is proud moment for us to mention that with 9581 votes the medical X-ray radiograph was reckoned the most important invention. The discovery of X-ray in 1895 by Wilhelm Röntgen has revolutionized the medical diagnosis and the first X-ray of Röntgen's wife's hand taken in December 1895 is perhaps the oldest existing X-ray image of a part of the human body. It may be noteworthy to mention that some other inventions in race were penicillin (1923), DNA double helix (1953) and pilot ACE computer (1950). It may be needless to mention that inventions like X-ray and radioactivity have significantly benefited countless patients for diagnosis and therapy of many diseases. Can we imagine what could have been fate of human civilization on Earth without these inventions? Let us cherish our glorious past and hope that we contribute more and more for benefit of humanity in large in future too!

B. N. Pandey, Editor

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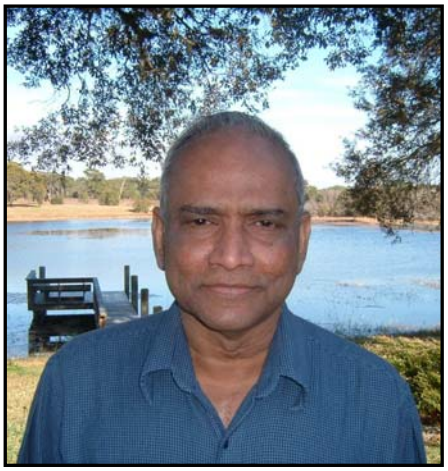
http://www.newscientist.com/gallery/scientific-objects-that-changed-the-world/1

1. PROFILE *of*

Prof. D. V. Rao



Professor Dandamudi Vishnuvardhana Rao is a highly reputed Emeritus Professor at New Jersey Medical School of the University of Medicine and Dentistry of New Jersey (UMDNJ), NJ, USA. He is world-renown for his research on dosimetry and radiobiology in nuclear medicine. More specifically, his work on the relative biological effectiveness (RBE) of radiopharmaceuticals that emit low-energy Auger electrons showed that they can be extremely radiotoxic *in vivo*.

Dr. Dandamudi Vishnuvardhana Rao was born to Sri Veeraraghavayya and Smt. Sarojini on April 5th, 1944 in a small farming village named Maredumaka near Vijayawada, Andhra Pradesh (AP), India. He attended local government schools for his primary and high school education. To attend high school, he had to cross two irrigation canals and walk about 7 km each day through rice paddy fields. He matriculated at

Hindu College, Machilipatnam, AP, India for his undergraduate studies in physics and graduated with a Bachelor of Science degree in 1964. Soon after, he began post-graduate studies in Nuclear Physics at Andhra University, Visakhapatnam, AP, India and received his first Masters degree in 1966. After completion of his studies, he married his wife Sujatha Anne.

Dr. Rao was admitted to the University of Massachusetts, Amherst, MA to attend graduate school. Being a young man of honor, he refused to bribe the police officer who would not clear him to obtain his passport. His convictions led him back to the police station on a daily basis where, after several days, the officer tired of his presence and finally acquiesced and cleared him for his passport. He completed his second Masters degree in physics in 1970 and continued his Ph.D. studies in Massachusetts. Under the tutelage of Professor Sastry and Professor William J. Gerace, his work on experimental and theoretical nuclear physics which led to a Ph.D degree in 1972. Soon after his graduation, he was recruited by Albert Einstein College of Medicine, Bronx, NY as an Instructor of Radiology. After two years, he moved to UMDNJ New Jersey Medical School as an Assistant Professor of Radiology and Director of Health Physics.

Dr. Rao's career flourished at UMDNJ at several levels and contributed greatly to research in Nuclear Medicine and Radiation Biology. At UMDNJ he worked closely with Professor Frank Ellis, a well-known radiotherapist. Dr. Rao was appointed as Director of Radiation Research and led his team in conducting both theoretical and experimental aspects of radiation biology and dosimetry of radiopharmaceuticals. His research led to changes in the formalism of the Society of Nuclear Medicine's (SNM) Medical Internal Radiation Dosimetry (MIRD) by extending it to sub-cellular compartments. This work was later published by the SNM as a monograph entitled '***Cellular S Values'***. During his research career, Dr. Rao received numerous grants from several organizations including the National Institute of Health (NIH). Dr. Rao was the recipient of several exceptional teaching and research awards from UMDNJ. He served on several committees at UMDNJ as well as national organizations. Dr. Rao chaired the Nuclear Medicine Task Group for American College of Medical Physics, which led to the publication of a report on quality control in nuclear medicine. He also chaired American Association of Physicists in Medicine's (AAPM) task group on Dosimetry of Auger Electrons, which produced three major reports that were published in Medical Physics.

Dr. Rao visited several national and international laboratories across the world and gave lectures on his research findings. Dr. Rao was a Visiting Scientist at the University of Oxford, England. He served as a technical expert for the International Atomic Energy Agency (IAEA) and, in this capacity, visited University of Ghana Medical School, Accra, Ghana and Kenyatta National Hospital, Nairobi, Kenya. Dr. Rao received a medal from the Swedish Medical Society, Stockholm, Sweden for his contributions to radionuclide dosimetry and to understand biological effects of internal radionuclides. Dr. Rao received the '***Loevinger-Berman Award***' from the Society of Nuclear Medicine for his contributions to medical internal dosimetry. This award is one of the highest awards given to an individual in recognition of exemplary scientific contributions to the field of internal dosimetry.

DEPARTMENT OF PHYSICS - UNIVERSITY OF MASSACHUSETTS AMHERST

New Biophysics Fellowship

Dandamudi V. Rao (Ph.D.'72) has made a very generous donation to endow a graduate fellowship in biophysics. Dr. Rao has had a distinguished career as a Professor of Radiology and Director of Radiation Research at the University of Medicine and Dentistry of New Jersey, where he authored four books on nuclear medicine, written many chapters and reports on nuclear medicine, and has given numerous invited talks on medical biophysics, as well as receiving many awards both in the U.S. and abroad. He writes: "During the years '68 to '72, I worked very closely with Profs. Kandula Sastry and Bill Gerace. Both were highly professional and very understanding and supportive as were all of the professors in the Department. I have fond memories of my education at UMass Amherst. I was the first student to leave the Department in 1972 to pursue a career in the field of biological physics, so it is fitting that this gift support a graduate student in that area. It is a small way to show my gratitude for the wonderful time I had at UMass Amherst." The Department would like to extend its deepest gratitude for this generous gift.

Dr. Rao authored four books and several book chapters related to nuclear medicine and medical internal dosimetry. He is known for his book "***An Introduction to the Physics of Nuclear Medicine***', published in 1977. Ninety-five peer reviewed scientific papers were published by him and some of them received national awards. One example is his novel idea of absorbed dose calculations for dynamically changing tumor volumes. This paper received '***Outstanding Manuscript Award in Dosimetry'*** by the Journal of Nuclear Medicine.

Professor Rao was our mentor at UMDNJ, Newark, NJ and we have great respect for him as a person, a teacher and a great scientist. He mentored several young investigators like us and they are all well established in their careers in the Unites States. Here are few examples; Mr. Venkata Lanka worked for more than 25 years at UMDNJ, most of the time as the Director of the Office of Radiation Safety Services; Dr. Vahid Yaghmai, is an Associate Professor of Radiology at Northwestern University, Chicago, IL. Dr. Ravi Harapanhalli has served as a Branch Chief in the Office of New Drug Quality Assessment at the United States Food and Drug Administration. Dr. Venkat R. Narra is an Associate Professor of Radiation Oncology at Robert Wood Johnson Medical School, The Cancer Institute of New Jersey; Michael T. Azure is an Associate Professor of Radiation Oncology at the University of Alabama, Birmingham.

Dr. Rao voluntarily retired from UMDNJ in 1998 and is currently an Emeritus Professor of Radiology at UMDNJ. Dr. Rao is spending his retired life in Inverness, Florida with his wife Sujatha. He volunteers to teach physics and mathematics to high school and university students. Dr. Rao volunteers his time to provide advice to senior citizens on how to manage their health insurance issues. He has also become involved in philanthropic endeavors. About ten years ago, he founded the '***Sarojini and Veeraraghavayya Dandamudi Old Age Home***' in Gosala, near Vijayawada. This is now home for twenty five senior citizens, and with Dr. Rao's assistance, continues to expand. More recently, he established the

'***Dandamudi V Rao Scholarship***' in Biological Physics to encourage graduate research in this area at his alma mater. He loves gardening, music, books, and travel. Dr. Rao and Sujatha are blessed with two daughters Saroja and Neeraja, and five grandchildren.

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2. Opinion Article

Radioprotectors Research: The present scenario

Dr. N. Rajendra Prasad

DBT-Overseas Associate, Armed Forces Radiobiology Research Institute, Bethesda, USA; Senior Lecturer, Department of Biochemistry & Biotechnology, Annamalai University, Annamalainagar-608 002, Tamilnadu, India.

Radioprotectors are the substances that protect normal tissues during radiation exposure. Clinical gain can be obtained either by a reduction in morbidity if the effects are confined to normal tissues, or by exploiting the hoped-for reduced radiosensitivity of normal tissues to deliver higher radiation doses and, thus, enhanced tumour cell kill, the latter strategy obviously not without risk. Among the molecular radioprotectors, WR-2721 (S-2- (3-aminopropyl-amino) ethyl phosphorothioic acid), also known as amifostine is the most thoroughly investigated radioprotective drug, initially developed at the Walter Reed Army Research Institute, USA under the Antiradiation Drug Development Program of the US Army Medical Research and Development Command. However, the radioprotective effect of synthetic phosphorothioate compounds, including amifostine, is short term, and is associated with severe side effects (e.g. nausea, vomiting, diarrhea, hypotension, hypocalcaemia, nephro- and neuro-toxicity) at clinically effective doses. These limitations have greatly restricted their clinical use. Despite its drawbacks, amifostine is the only radioprotective drug that has been approved by the Food and Drug Administration (FDA), USA. Amifostine is being used clinically for ameliorating the incidence of xerostomia (dry mouth) in patients undergoing radiotherapy for the treatment of head and neck cancer. Hence, the success with these compounds has also been limited. The fact remains that to date there is no single radioprotective agent available which meets all the prerequisites of an ideal radioprotector, i.e. produces no cumulative or irreversible toxicity, offers effective long-term protection, possesses a shelf life of 2–5 years, and can be easily administered. In view of this, the search for newer, less toxic and more effective radioprotective drugs continues.

Current programs of radiation protection research

Number of Indian origin scientists at USA actively engaged in the development of radioprotectors. US Federal Government begin number of research programs on Medical Countermeasures against Radiological and Nuclear Threats. NIAID-NIH established 8 Centers for Medical Countermeasures against Radiation (CMCR). Dr. Narayani Ramakrishnan, Project Officer from NIAID monitoring the CMCRs' activities. CMCR scientists are actively involved in

the identification of a radioprotectant. Defense Threat Reduction Agency (DTRA) programs in Armed Forces Radiobiology Research Institute (AFRRI) also dynamically participated in the development of radioprotectors in order to face nuclear warfare/terrorism. Dr. Srinivasan and Dr. Whitnall leads NIAID supported programs in AFRRI to screen potential radioprotectants, particularly from natural resources. AFRRI scientists Dr. Sree Kumar, Sanchita Ghosh and Shilpa Kulkarni as lead investigators with Dr. Martin Hauer-Jensen, Associate Dean for Research at the College of Pharmacy, University of Arkansas for Medical Research proved gamma-tocotrienol as an effective radiation countermeasure in experimental animals. Dr. Kumar et al. recently developed one more novel chemical entity, Ex-Rad, for radioprotection. Another agency actively associated with radiation research in USA is Biomedical Advanced Research and Development Authority (BARDA).

In India Division of Radiation Biology & Radioprotection, INMAS supported by DRDO is working for the development of 'biological radioprotector' from herbal neutraceutical, bacterial, stem cell and UV screen. In BARC, Biomedical Group particularly Radiation Biology and Health Sciences Division carried out number of experiments for radioprotector development. Already, a randomized clinical trial on the effect of *Ocimum sanctam* as a radioprotector has been carried out by MAHE. India is the country rich in natural phytoceuticals and nutraceutical antioxidants. Indigenous phytoceuticals are proven antioxidants and their radioprotective effect has to be thoroughly investigated. Indo-US Science & Technology Forum (**http://www.indousstf.org/**), established under an agreement between the Governments of India and the United States of America, promotes and catalyzes Indo-US bilateral collaborations in science, technology, and biomedical research through substantive interaction among government, academia and industry.

This is the time to exchange ideas, information, skills and technologies, and to collaborate on scientific and technological endeavors of radioprotector development that can translate the power of science for the benefit of mankind at large.

Dr. N. Rajendra Prasad is currently working as Senior Lecturer in the Department of Biochemistry & Biotechnology, Annamalai University, Tamilnadu, India. He has been recently awarded DBT-Overseas Research Associateship. Under this scheme he visited Armed Forces Radiobiology Research Institute, Bethesda, USA. He has also received Tamilnadu Government Science and Technology Young Scientist Award for the year of 2004. He is currently running DST- Fast Track project for young scientists and a UGC major research project on the role of phytochemicals in radiation modification in different cell systems.

3. FROM ARCHIVES OF RADIATION SCIENCES

Paper: Hexokinase, Aldolase and ATP-creatine Transphosphorylase in X-irradiated Rats

Source: International Journal of Radiation Biology, 1958, 1: 1, 52-60 (First Issue of International Journal of Radiation Biology)

Author: M. B. Sahasrabudhe, M. K. Nerurkar; A. J. Baxi and D. K. Mahajan[1]

Laboratory: Biology Division, Atomic Energy Establishment (now Bhabha Atomic Research Centre), Trombay, Bombay, [1]Human Variation Unit, Indian Cancer Research Centre (now ACTREC), Parel, Bombay, India

Highlights of the paper: In this research article, effect of whole body gamma irradiation (WBI) was studied on ATP-creatine transphosphorylase activities and the levels of lactic acid in spleen, skeletal muscle, brain and liver of rats. Results showed significant decrease on Hexokinase and aldolase level, when animals were sacrificed 2 h after WBI. Levels of lactic acid decreased in different tissues of X-irradiated rats suggesting decreased glycolysis and/or elevated glyconeogenesis.

Significance of the paper: The paper is one of the seminal research articles showing effect of radiation on glucose metabolism. This is one of two research papers published from India in first issue of International Journal of Radiation Biology out of nine original research articles, which shows the long Indian history in the field of radiation biology and radiation oncology. Moreover, this paper emphasizes the implication of -SH group on radio-sensitivity of enzymes in respiration.

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

Radiation Protection

- **Radiation protection constraints for use of proton and ion accelerators in medicine**
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Radiation exposure and cancer risk

- **Non-cancer disease mortality and risk analysis among medical X-ray workers in China**
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  http://www.nature.com/onc/journal/v27/n2s/abs/onc2009349a.html

Bystander effect

- **Communication of ionising radiation signals - a tale of two fish**
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Space/Aviation Radiation

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Low Dose Radiobiology

- **Dose response and kinetics of foci disappearance following exposure to high- and low-LET ionizing radiation**
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Technical advancement

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- **Therapeutic Dose from a Pyroelectric Electron Accelerator**
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- **Prediction of clonogenic cell survival curves based on the number of residual DNA double strand breaks measured by γH2AX staining**
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Cancer Radiotherapy

- **Predicting response to radiotherapy: Evolutions and revolutions**
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- **Intensity modulated radiotherapy (IMRT) in the treatment of children and Adolescents - a single institution's experience and a review of the literature**
  http://www.ro-journal.com/content/4/1/37
- **New molecular targets in radiotherapy: DNA damage signalling and repair in targeted and non-targeted cells**
  http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1J-4XFPR35-9&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=7ea26794dfe5f1a5335e28dc9591bed7
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Cancer Biology and Therapy

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Nuclear Technology & Safety

Radiation Safety

- **Operational radiation protection in high-energy physics accelerators**
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Science and Society

Indian Science and Technology

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- **IIT faculties fast in protest**

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Science in General

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- **Character and Spatial Distribution of OH/H2O on the Surface of the Moon Seen by M3 on Chandrayaan-1**

  http://www.sciencemag.org/cgi/content/abstract/326/5952/568

- **India pushes for common responsibility**

  http://www.nature.com/nature/journal/v461/n7267/full/4611054a.html

- **Lack of association of three primary open-angle glaucoma-susceptible loci with primary glaucomas in an Indian population**

  http://www.pnas.org/content/106/44/E125.extract?etoc

- **No Sign Yet of Himalayan Meltdown, Indian Report Finds**

  http://www.sciencemag.org/cgi/content/full/326/5955/924?sa_campaign=Email/sntw/13-November-2009/10.1126/science.326.5955.924

- **LHC smashes protons together for first time**

  http://www.newscientist.com/article/dn18186-lhc-smashes-protons-together-for-first-time.html?DCMP=NLC-nletter&nsref=dn18186

5. LETTERS FROM THE READERS

- Thank you for your mail and for the information. Yes saw the Newsletter and it is really good also.

  ***-Prof.K.R.S.Sambasiva Rao**, Professor and Head, Centre for Biotechnology, Acharya Nagarjuna University Nagarjunanagar - 522 510 Guntur, A.P.*

- Greetings to you and the entire team. Thanks for enclosing the wonderfully brought out e-newsletter. Congratulations to you for the editorial stewardship and ushering the ISRB to newer horizons. I have enjoyed reading the contents.

  *-**Dr Suprasanna,** Nuclear Agriculture and Biotechnology Division, Bhabha Atomic Research Centre, Mumbai 400 085*

- The newsletter issue is looking great! Its subject matter is both informative and interesting!!

  *-**Dr Madhu Bala,** Institute of Nuclear Medicine and Allied Sciences, New Delhi*

- I appreciate your response for sending me the eNewsletter. Please keep me informed regarding the next activities of ISRB.

  *-**Dr Sanjit Dey,** Reader, Department of Physiology, University of Calcutta, Kolkata*

6. 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

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.

7. REPORT ON ACTIVITIES OF ISRB

National Assay Competition on Hiroshima Day (Aug. 6), Govt. Dungar College, Bikaner, Rajasthan, Aug. 6, 2009

Since the nuclear holocaust of Hiroshima and Nagasaki which shook the world and killed more than the 1,40,000 people and has continued to plague many more future generations with the residual side effects of radiation, the world community is trying to get rid of nuclear weapons and promote the beneficial effects of radiation. With a view of this, the eminent scientists of India and abroad interact and discuss time-to-time the recent research in the field of Radiation Biology, promoting the beneficial uses of radiation biology and educating the public about radiation using Indian Society for Radiation Biology (ISRB) as a active scientific platform.

In addition to many other regular scientific activities (like meetings, schools, workshops etc.), ISRB conducted a "**National Essay Competition**" on the Hiroshima Day-6th August, 2009 for College and University students.

The responsibility of holding this event was given by Prof. P. K. Goyal, President Indian Society for Radiation Biology, to Dr. R. K. Purohit, an active member of the executive committee of ISRB. Dr. Purohit as the organizing secretary immediately chalked a schedule and held a meeting with faculty members of the Zoology Department of Dungar College, Bikaner. Later on, Dr. Purohit drafted the contents of invitation letters and application forms were sent to various Colleges and Universities all over India with the request the to promote student's participation in the National Essay Competition in large number. The title of the essay was "Radiation- Boon or Curse", which is truly appropriate to remember the tragic events on 6th August, 1945 and resolve to work for preventing such a holocaust in future. Banners were made and placed at key points in Dungar College, Bikaner. Dr. Purohit also took great pain and met the media personalities, held press conferences with a view to create awareness among the people about this essay competition.

By 31st July, 2009 the essay competition became the talk of the city. The venues of essay competition were Pratap Sabhagar and Knowledge Centre in the Dungar College, Bikaner. On 6th August, 2009 about 150 students from various educational and research institutes turned up to participate in the competition, which was duly inaugurated by Dr. P. R. Ojha in the presence of journalists of various newspapers and

TV channels including the Doordarshan, India. Later, the students were allotted their seats as per serial numbers listed against their names on lists, pasted outside the Sabhagar. Copies were given to them and they were asked to start at the scheduled time of 12.30 pm. TV reporters covered the event throughout contest period, which ended at 2pm.

Later on, the participants were given the refreshment and their certificates of participation were awarded to them. Copies were collected and handed over to Dr. Purohit, Organizing Secretary, whose tireless efforts made this event a grand success.

The Awardees would be given the prizes in separate function.

8. UPCOMING MEETINGS/ WORKSHOPS

- **Gordon Research Conferences in 2010**
  http://www.grc.org/meetings.aspx?year=2010

- **Targeting Cancer Invasion and Metastasis, February 21-24, 2010, Deauville Beach Resort, Miami Beach, FL, USA**

  http://www.nature.com/natureconferences/miami/MWS2010/index.html

- **AACR-JCA 8th Joint Conference on Cancer Genomics, Epigenomics, and the Development of Novel Therapeutics, February 5-9, 2010, Waikoloa, Hawaii, USA**

  http://www.aacr.org/home/scientists/meetings--workshops/special-conferences/aacrjca-joint-conference.aspx

- **Maintenance of Genome Stability 2010, March 8-11, 2010 - Antigua**
  http://www.abcam.com/index.html?pageconfig=resource&rid=11521&utm_campaign=Event.ENSAU&utm_source=Abcam.Events&utm_medium=Email&utm_term=122109-MGSBOTTOM&intGoUser=6194208

- **9th International Microbeam Workshop, July 15-17, 2010, Darmstadt, Germany**

  https://www.gsi.de/forschung/bio/conferences/microbeam9_e.html

- **Epigenetics & Stem Cells, August 25-27, 2010 - Copenhagen, Denmark**
  http://www.abcam.com/index.html?pageconfig=resource&rid=12312&utm_campaign=Event.ENSAU&utm_source=Abcam.Events&utm_medium=Email&utm_term=122109-ESCBOTTOM&intGoUser=6194208

- **Cancer and Metabolism: Pathways to the Future, September 19-21, 2010 - Edinburgh, Scotland**

http://www.abcam.com/index.html?pageconfig=resource&rid=12304&utm_campaign=Event.ECHESC&utm_source=Abcam.Events&utm_medium=Email&utm_term=122109-CandMBOTTOM&intGoUser=6194208

- **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**

- **31st Annual Conference of Association of Medical Physicists of India, Nov. 18 21, 2010**
  Contact person: Dr KJ Maria Das, Organizing Secretary, AMPICON 2010, Department of Radiotherapy, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Rai Bareli Road, Lucknow 226 014, India, **Email:** info@ampicon2010.com

- **14th International Congress for Radiation Research** 2011, August 2011 in Warsaw, Poland.
  http://www.ptbr.org.pl/icrr2011/icrr2011_venue.htm

- **ACRR Meetings & Workshops Calendar**

  http://www.aacr.org/home/scientists/meetings--workshops/meetings--workshops-calendar.aspx

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**

9. AWARDS/HONORS TO ISRB MEMBERS

Name of the ISRB Member	Affiliation	Award/Honors	Year/ Period
Prof. A. B. Prasad	Center for Bioinformatics, Jerath Compound, Hinoo, Ranchi, Jharkhand, India	-Introduced Plenary speaker 10th International conference of Environmental Mutagen, Florence, Italy August 20-25, 2009 -Visiting Professor, Department of Biotechnology, Birla Institute of technology, Mesra, Ranchi, Jharkhand.	August 2009

Congratulations *to the Member of Indian Society for Radiation Biology for prestigious Awards and Honors!!*
May God bless all of you many more in future!!

10. RECENT PUBLICATIONS/PATENTS OF ISRB MEMBERS

Author/Affiliation	Title	Citation	Key words
Kumar A, Ali M, Mishra P, **Pandey BN**, Sharma P, **Mishra KP***. Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai - 400085, India ***Email:** Mishra_kaushala@rediffmail.com	Thorium-induced neurobehavioural and neurochemical alterations in Swiss mice.	International Journal of Radiation Biology, 2009, 85(4):338-347	Thorium Toxicity; Neurobehavioral, neurochmeical alterations; oxidative injury
Kumar B[1], Kumar A, **Pandey BN**, **Mishra KP**, Hazra B[1,*] Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai - 400085, India [1]Department of Pharmaceutical Technology, Jadavpur	Role of mitochondrial oxidative stress in the apoptosis induced by diospyrin diethylether in human breast carcinoma (MCF-7) cells.	Molecular and Cellular Biochemitry, 2009, 320:185-95	Natural Plant Products; Apoptosis; mitochondria; oxidative stress

University, Kolkata, India ***Email:** banasrihazra@yahoo.co.in			
Tripathi Y B Department of Medicinal Chemistry Institute of Medical Sciences Banaras Hindu University, Varanasi, India ***Email:** yaminiok@yahoo.com	PTY-1 a novel **PKC inhibitor** and **Nephroprotective (For diabetic Nephropathy)**		Herbal drug, neuroprotection
Tripathi YB Department of Medicinal Chemistry Institute of Medical Sciences Banaras Hindu University, Varanasi, India ***Email:** yaminiok@yahoo.com	Polyherbal Formulation to prevent Radiation induced damages :	No. 661/DEL/2002, (India) (DRDO Funded Project)	Herbal drug, radioprotection
Tripathi YB Department of Medicinal Chemistry Institute of Medical Sciences Banaras Hindu University, Varanasi, India ***Email:** yaminiok@yahoo.com	Polyherbal drug to prevent atherosclerosis and hyperlipidemia	Patent No.: PCT/IN03/00399 (Dept of Biotech Funded Project) **China Patent:** ZL200380109770.X dated-17.06.2009 **US Patent:** 7,416,743 B2 dated-August 26, 2008 **European Union Patent:** 1583499 dated-25.6.2009	Herbal drug, atherosclerosis
Menon A, Krishnan CV and **Nair CKK*** Amala Cancer Research Centre, Trichur, Kerala, India ***Email:** ckknair@yahoo.com	Protection from gamma-radiation insult to antioxidant defense and cellular DNA by POLY MVA, dietary supplement containing palladium lipoic acid formulation	International Journal of Low Radiation,6, 248-262, 2009 .	Radioprotection

Joy J and **Nair CKK*** Amala Cancer Research Centre, Trichur, Kerala, India ***Email:** ckknair@yahoo.com	Protection of DNA and membrane from gamma-radiation induced damages by *Centella asiatica*	Journal of Pharmacy and Pharmacology, 61: 941–947, 2009	Radioprotection
Chandrasekharan DK, Kagiya VT and **Nair CKK*** Amala Cancer Research Centre, Trichur, Kerala, India ***Email:** ckknair@yahoo.com	Radiation Protection by 6-Palmitoyl Ascorbic Acid-2-Glucoside:Studies on DNA Damage *in vitro, ex vivo, in vivo* and Oxidative Stress *in vivo*	Journal of Radiation Research, 50, 203-212, 2009	Radioprotection
Jayakumar OD, Ganguli R, Tyagi AK, Chandraseharan DK and **Nair CKK*** Amala Cancer Research Centre, Trichur, Kerala, India ***Email:** ckknair@yahoo.com	Water dispersible Fe3O4 nanoparticles carrying doxorubicin for cancer therapy	Journal of Nanosciene and Nanotechnology, 9, 6344-6348, 2009.	Nanoparticles
Khanna PK and **Nair CKK*** Amala Cancer Research Centre, Trichur, Kerala, India ***Email:** ckknair@yahoo.com	Synthesis of silver nano-particles with fish oil: a novel approach to nano-biotechnology? Synthesis of silver nano-particles with fish oil: a novel approach to nano-biotechnology?	International Journal of Green Nanotechnology: Physics and Chemistry, 1:P3–P9, 2009	Nanoparticles

11. CAREER FORUM

Positions and Fellowships

- **NIH Director's New Innovator (DP2) Award program t**o 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/PAR-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

- **DOE Puts Up $85 Million for Grants to Young Scientists**
  The U.S. Department of Energy (DOE) has committed $85 million next year for a new program to help 50 young scientists establish their research careers. It is the latest

federal agency to try to lend a hand to this vulnerable population.
http://www.sciencemag.org/cgi/content/summary/325/5939/375

- **NIH Pathway to Independence (PI) Award (K99/R00)**
  http://grants.nih.gov/grants/new_investigators/QsandAs.htm#transDetails

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

- **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
- **Pancreatic cancer research centre funding over 2 million dollars**

  Please view individual grant mechanisms for eligibility and deadlines.
  Grants provide funding for outstanding pancreatic cancer research.
  http://www.aacr.org/home/scientists/research-funding--fellowships.aspx

Article related to career issues

- **Support for Tenure-Track Jobs in Biomedical Sciences**

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

- **No place like home**

  Young Eastern European, Asian scientists are returning to their home countries to set up labs — with mixed success.
  http://www.nature.com/naturejobs/2009/091001/full/nj7264-681d.html

- **Why your boss is incompetent**

  http://www.newscientist.com/article/mg20427392.600-why-your-boss-is-incompetent.html?DCMP=NLC-nletter&nsref=mg20427392.600

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

- **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**.

12. ARTICLE OF THE ISSUE

- **Reanalysis of cancer mortality in Japanese A-bomb survivors exposed to low doses of radiation: bootstrap and simulation methods**

Cancer mortality in Japanese A-bomb survivors exposed to less than 20 mSv external radiation in 1945 was analysed previously, using a latency model with non-linear dose response. Questions were raised regarding statistical inference with this model and reanalyzed with Poisson regression models incorporating latency, allowing linear and non-linear dose response, which showed Liver and urinary cancer mortality risk is significantly raised using a latency model with linear dose response. Moreover, a non-linear model is strongly superior for the stomach, liver, lung, pancreas and leukaemia. Read the full article on the link below:

http://www.ehjournal.net/content/8/1/56

13. OPEN ACCESS ARTICLES/SERIES OF ARTICLES

ARTICLES SERIES

- **Nature Reviews Cancer: Focus on p53 — 30 years on**

  http://www.nature.com/nrc/focus/p53/index.html

- **hypoxia and metabolism in different aspects of tumour biology from Nature Reviews Cancer**

  http://www.nature.com/nrc/focus/hypoxia-metabolism/index.html

ARTICLES

- **Malignant cell-derived PlGF promotes normalization and remodeling of the tumor vasculature**

  http://www.pnas.org/content/106/41/17505.abstract?etoc

- **Doxorubicin loaded Polymeric Nanoparticulate Delivery System to overcome drug resistance in osteosarcoma**

  http://www.biomedcentral.com/1471-2407/9/399/abstract

- **PTEN dosage is essential for neurofibroma development and malignant transformation**

  http://www.pnas.org/content/106/46/19479.abstract?etoc

- **Differential induction of apoptosis in HER2 and EGFR addicted cancers following PI3K inhibition**

  http://www.pnas.org/content/106/46/19503.abstract?etoc

- **Role of p53 mutation in the effect of boron neutron capture therapy on oral squamous cell carcinoma**

  http://www.ro-journal.com/content/4/1/63

- **Whole pelvic helical tomotherapy for locally advanced cervical cancer: technical implementation of IMRT with helical tomothearapy**

  http://www.ro-journal.com/content/4/1/62

- **Taxanes: optimizing adjuvant chemotherapy for early-stage breast cancer**

  http://www.nature.com/nrclinonc/journal/v7/n1/abs/nrclinonc.2009.186.html?lang=en

- **Reanalysis of cancer mortality in Japanese A-bomb survivors exposed to low doses of radiation: bootstrap and simulation methods**

  http://www.ehjournal.net/content/8/1/56

- **Liver metastases from colorectal cancer: radioembolization with systemic therapy**

  http://www.nature.com/nrclinonc/journal/v6/n12/abs/nrclinonc.2009.165.html?lang=en

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

14. 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

- **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

15. 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

- **Free Radical Biology and Medicine**

  http://www.elsevier.com/wps/find/journaldescription.cws_home/525469/description#description

- **Free Radical Research**

  http://www.tandf.co.uk/journals/authors/gfrrauth.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**, Assistant Editor: Dr. H. D. Sarma Email: **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

- **Iranian Journal of Radiation Research**

  http://www.ijrr.com/

- **Journal of Cancer Research and Therapeutics**

  http://www.cancerjournal.net/

- **Journal of Experimental and Clinical Cancer Research**

  http://www.jeccr.com/

- **Journal of Radiation Research**

  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

- **Radiation Oncology**

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

- **Radiation Physics and Chemistry**

  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

16. RECENT BOOKS

- **Radiation Hormesis and the Linear-No-Threshold Assumption**

  By *Sanders*, CL

  Current radiation protection standards are based upon the application of the linear no-threshold (LNT) assumption, which considers that even very low doses of ionizing radiation can cause cancer. The radiation hormesis hypothesis, by contrast, proposes that low-dose ionizing radiation is not only safe but is healthy and beneficial. Highlights how proponents of the LNT assumption manipulate and ignore an abundance of published data supporting radiation hormesis

  http://www.springer.com/medicine/radiology/book/978-3-642-03719-1

- **RADIATION AND REASON**

  By Wade Allison

  A clear and positive scientific account of the effect of radiation on life. For more than half a century the view that radiation represents an extreme hazard has been accepted. This book challenges that view by facing the question **How dangerous is ionising radiation?**

  Chapter 1 Perceptions

  - A mistake
  - Personal risk and knowledge
  - Individual and collective opinions
  - Confidence and decisions

- Science and safety

Chapter 2 Atmospheric Environment

- Size and composition of the atmosphere
- Atmospheric change
- Energy and agriculture

Chapter 3 The Atomic Nucleus

- Powerful and beneficial
- Size scales
- Atoms and electrons
- The nuclear atom
- The quiescent nucleus
- Energy for the Sun

Chapter 4 Ionising Radiation

- The spectrum of radiation
- Damage from radiation
- Nuclear stability
- Measuring radiation
- Natural environment

Chapter 5 Safety and Damage

- Proportionate effects
- Balancing risks
- Protection of man
- Damage and stress
- Time to repair
- Collective dose
- Safety margins
- Multiple causes
- Beneficial and adaptive effects
- Surprise at Chernobyl

Chapter 6 A Single Dose of Radiation

- What happens to molecules
- What happens to cells
- Evidence at high dose
- Repair mechanisms
- Low and intermediate doses
- Survivors of Hiroshima and Nagasaki
- Radiation-induced cancers
- Medical diagnostic scans
- Nuclear medicine
- People irradiated at Chernobyl

- Thyroid cancer
- Other cancers at Chernobyl

Chapter 7 Multiple Doses of Radiation

- Distributed doses
- Cancer therapy
- Fractionation
- Doses in the environment
- Radon and lung cancer
- Radiation workers and dial painters
- Biological defence in depth

Chapter 8 Nuclear Energy

- Realising nuclear energy
- Explosive devices
- Civil power from fission
- Energy without weapons
- Waste

Chapter 9 Radiation and Society

- Perceiving radiation
- Public concern
- Testing and fallout
- Deterrence and reassurance
- Judging radiation safety

Chapter 10 Action for Survival

- Relaxed regulations
- New power stations
- Fuel and politics
- Waste strategy
- Decommissioning
- Proliferation and terrorism
- Fusion power
- Costs and the economy
- Fresh water and food
- Education and understanding

Chapter 11 Summary of Conclusions

Further Reading and References

http://www.radiationandreason.com/index.php

- **"Herbal Medicine: *A Cancer Chemopreventive and Therapeutic Perspective*"**

Editor: Arora, A.

Publisher: Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi

http://www.jaypeebrothers.com/pgDetails.aspx?cat=s&book_id=978-81-8448-841-8

17. 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**. 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 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/isrbenewsletter/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**, 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.

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

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

Name of the ISRB Member:

• Recent publications/patents of ISRB Members

Dear Members of ISRB,

It is our pleasure to mention that in last two years, '**Radiation Science Today**' the eNewsletter published by Indian Society for Radiation Biology, has made a significant contribution to link the Members of Society working in various research fields of radiation biology and allied sciences. To further strengthen the interaction amongst Members of ISRB, we initiate a new Column **'Recent Publications of ISRB Members' beginning** from next issue of eNewsletter i.e. **Jan-March , 2010 Issue 9.**

The publication/patents meeting following criteria would be included in the eNewsletter:

1. At least one author of citation should be Life Member of ISRB.

2. It should be published after 2009. Citations only with final page number should be provided i.e. 'In Press' citations would not be considered.

3. It should be published in National/International Journals or Book/Book Chapters. No abstract or Conference Proceedings would be considered.

4. Names of ISRB Members names should be bold and underlined. The authors may provide maximum five key words. The email address of corresponding authors should be provided so that interested may contact to seek some clarification or to receive reprints.

5. Members should provide full citation(s) as and when it would be made available in the required format.

All ISRB Members are requested and encouraged to submit their recent publication(s) in format provided with **Subject Head line: Publication.** A copy of the format is provided below for your reference.

You may communicate the message to other ISRB members, if they could not receive it.

Authors/Affiliation/Email	Title	Citation	Key Words
Kumar A, Ali M, Mishra P, **Pandey BN,** Sharma P, **Mishra KP.** Email: mishra_kaushala@rediffmail.com Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai - 400085, India	Thorium-induced neurobehavioural and neurochemical alterations in Swiss mice.	International Journal of Radiation Biology, 2009, 85(4):338-347.	Thorium Toxicity; Neurobehavioral, neurochmeical alterations; oxidative injury
Hazra B[1], **Pandey BN**, Kumar A, Ghosh S[1], Kumar B[1], **Mishra KP** Email: banasrihazra@yahoo.co.in Radiation Biology and Health Sciences Division, Bhabha Atomic Research Centre, Mumbai - 400085, India [1]Department of Pharmaceutical Technology, Jadavpur University , Kolkata , India	Plant Products in modification of cellular damage by radiation: Implications in cancer radiotherapy.	In "Herbal Drugs: A Cancer Chemopreventive and Therapeutic Perspective" (Ed.: R. Arora, INMAS, New Delhi), Publisher: Jaypee Brothers Medical Publishers, New Delhi , 2009	Cancer radiotherapy; Natural Plant Products; Apoptosis

• 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

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. The details of books/journal would be included in the eNewsletter **free of cost**!!!

INDIAN SOCIETY FOR RADIATION BIOLOGY
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Web page: **www.icrb2008.org**, **www.isrb-india.com**

We hope you will find this Newsletter as a useful resource of information. However, we look forward for your active contribution and valuable comments/ suggestions for improvement of the eNewsletter on **isrb_enewsletter@yahoo.co.in** or any of the Member of Editorial Board.

You are being sent the eNewsletter since either you are member of Indian Society for Radiation Biology or identified as potential reader of the eNewsletter. If you wish to discontinue receiving the eNewsletter in future write to us: isrb_enewsletter@yahoo.co.in.

Disclaimer: *Every effort has been taken to provide up-to-date and correct information in the Newsletter. However, readers are advised to check the related source of information.*

Editorial Board

INDIAN SOCIETY FOR RADIATION BIOLOGY

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

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

Application for Membership

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: Degree University Year

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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 …………...……………………..…

For Use of ISRB Secretariat Only

Membership No. ....Type of Membership ....…..........………..……...….................

Membership approved/not approved by Executive Council in its meeting held on……………………………….

Payment received vide …………………………… on ……………………………………………………………...

Secretary/Treasurer: …………………………..

President, Indian Society for Radiation Biology

Please mail the Application for Membership along with two recent passport size photographs to: Dr Madhubala, Secretary, ISRB, Department of Radiation Biology, Institute of Nuclear Medicine & Allied Sciences Brig. S. K. Mazumdar Marg, Delhi, India, India. E-mail: balainma44@hotmail.com; bala44@gmail.com