

◆ **Editorial**

Uncertainties in radiation sciences: The need for more researches and publications. Experience of 10 years publications in this field and our new plans

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Three nearly simultaneous events around the end of the 19th century, i.e., the discovery of X-rays by Roentgen in 1895, natural radioactivity by Antoine-Henri Becquerel in 1896 and isolation of Radium by the Curies' in 1898 opened the nuclear era which has changed broadly the worlds of physics, biology and medicine. At the close of the 20th century, fundamental discoveries in biology at molecular level often appear to overshadow this earlier work. However as more basic discoveries are made these separate scientific eras merged to contribute to the conquest of disease, especially cancer. The rapid advancements achieved during recent years, mainly due to revolutionary methodological improvements, have led to an unparalleled explosion of information. The exponential growth of data is so impressive that the conceptual evaluation of the material has seemed almost an insignificant part of the scientific process. All these achievements have allowed researchers to ask new questions or to rephrase the old ones. The result is a virtual avalanche of new formed knowledge. However, in spite of years and years hard work of researchers and scientists there are still many unsolved questions in the field of radiation research. The search for new radiation treatment techniques to improve local tumor control continues to represent a major challenge in the management of localized human cancer. The introduction of three-dimensional conformal radiation therapy (3D-CRT) has heralded a new era in radiotherapy. It is now possible to plan and prescribe radiation doses with desired dose distribution to the entire tumor using computer aided techniques. We are still far from achieving a personalized cancer treatment. Targeted therapy is not a routine cancer treatment modality yet. In the field of radiobiology, the last three decades have seen a major shift from a DNA-centric view of radiation induced damage, to a biological view that appreciates the importance of cellular macro- and micro-environment and underlying genetics. Radiobiological phenomena such as radio adaptation, bystander effect and inherent radio sensitivity have changed classical belief of linear non threshold (LNT) model. While the mechanisms underlying these effects and responses are not clear enough, it is apparent that their implications are much wider than the field of radiobiology. These biological paradigms might have major implications in radiation carcinogenesis and cancer radio- and chemo-therapy. For radiation accident, we still need to search for biomarkers suitable for biological dosimetry and also treatment of radiation victims. Also yet we need to search for a potent chemical radio-protector for using in the events of nuclear or radiological accidents. Large scale nuclear accidents such as that happened in Chernobyl and recently (2011) in Fukushima, not only threatened many lives but also provided a need for continual risk assessment from exposure due to radioactive pollution in the environment. Health hazards of non-ionizing radiation in which their applications are increasing

rapidly should also be borne in mind.

After 10 years of publication in the various fields of radiation sciences, we realized the need for broader readerships and contributors throughout the world. There are many institutes in the world doing researches in this field but the number of scholarly journals to meet the demand of most of the researchers is limited. Therefore we have decided to advance our scientific activities towards publishing a journal with a title "The *International Journal of Radiation Research*".

The *International Journal of Radiation Research (IJRR)*, a fully open access multidisciplinary journal, is devoted to the advancement and dissemination of fundamental knowledge concerning the radiation oncology, basic and clinical radiation biology, medical physics, nuclear medicine, tumor imaging, radio-sensitizers, radio-protectors, biological dosimetry, risk assessment, environmental sciences, epidemiology, new modalities in cancer treatment and health hazards of non-ionizing radiation. The scholarly journal IJRR along with very high quality journals published in this field will try to bring all these various disciplines together and present a platform for the exchange of detailed scientific information concerning the latest developments in the fields. Our mission is to serve the needs of scientists and community by working with capable researchers and professionals from across the world to produce the most accurate and up to date scientific and technical resources. We would like the IJRR become a venue for original, rigorous and complete expositions of experiments that add to our understanding at the radiation science and a worldwide representative of all the scientists interested in this field. Young scientists are requested to contribute by submitting interesting observations, raising controversies and publish constructive criticisms on published articles as well as submitting original articles in the cutting edge areas of the radiation science. The Editorial board solicits quality manuscripts which will be subjected to vigorous peer review. We will maintain high standards of scientific quality and integrity for the journal and will expand the focus of the journal into new areas of radiation research and will try to make the journal to become more visible internationally. We will also monitor the quality of reviews for reviewer's responsiveness, scientific value and constructive comments. In this way we hope to provide useful information to authors whose manuscripts have been rejected and to improve the presentation of manuscripts accepted for publication. The editorial board and the publisher of IJRR will work to expedite the publication of timely research and proceedings of national and international symposium and conferences. We will try to do our bests in order to gain the recognition and respect of oncologists, radiobiologists, medical physicists, and other scientists working in diverse field of radiation research.