

# Preface



National Institute of Radiological Sciences has conducted various activities aiming at advancement of radiological sciences as a unique institution conducting comprehensive scientific research for radiation and health since its foundation in 1957. The fiscal year 2005 was the last year of the 1st 5-year mid-term plan carried out as an independent administrative agency. During the past five years, our activities focused on the completion of projects and on planning towards the next 5-year mid-term.

The research activities generally advanced favorably along the fiscal year plan, and all projects proposed by the mid-term plan were successfully completed. Among them the clinical studies of cancer treatment with heavy charged-particle therapy made extensive progress, and the total number of the patients who received the treatment exceeded 2,600 in 2005. In order to enhance the capability of this exciting new treatment, we completed the technical development of basic design and technology for production of a compact carbon ion accelerator for clinical use. We also organized the international symposium on charged particle therapy in Austria, in February 2006, in order to obtain overseas publicity for this fruitful work. In the field of diagnosis and medical imaging for appropriate treatment planning, we provided special funding for development of four-dimensional X-ray CT and the next generation PET project, both of which were successfully completed. As we obtained special funding from MEXT (Ministry of Education, Culture, Sports, Science and Technology) as a core institution in the molecular imaging research program, we started a new research unit, “Molecular Imaging Center”, in November 2005 for promotion of molecular imaging research. Molecular imaging is the technology to visualize molecular processes in the living body by external measurements. It is expected to play a key role in post-genomic science, particularly when this technique is combined with the results of basic molecular biology, such as radiosensitive gene profiling or gene expression induced by radiation.

In addition to the joint projects for promoting these research activities efficiently, we carried out various exchange programs including the use of research facilities and equipment, education in radiation protection, and training of scientific staff and technologists. We have been actively involved in international cooperation programs related to radiation and health, such as UNSCEAR, WHO, ICRP, and IAEA, and in January 2006, NIRS was designated as an IAEA Collaborating Center on the biological effects of low-dose radiation. We continue our efforts to contribute as an international core center in radiation science.

I sincerely ask for your continuing support to NIRS and welcome any suggestions and critiques to advance our activities.

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President