

Preface

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The workshop on the radiobiology in Italy supported by INFN was proposed as a forum of the INFN community involved in the field of biophysical radiation effects. Some of the main radiobiology projects funded by the INFN scientific commission for technologic and interdisciplinary research (CSN5) enter their final phase in 2008, and consequently the CSN5 organized the meeting to sum up the present results, to establish interdisciplinary communication channels among different research groups. Moreover, the workshop served to discuss the main challenges of radiobiology research and the role of INFN in this field, which is a historical research activity of the Institute.

INFN-sponsored researchers are involved on both the “edges” of radiobiology research, *i.e.* low and high doses. Low doses are a concern for radiation protection on Earth and during space missions, while high doses are used in radiation therapy. Experimental activities cover both low-dose effects and radiation protection (including flight experiments on the International Space Station, and new experiments on the bystander effects) and radiotherapy (in particular hadrontherapy and IORT). INFN nourished in the past years a specific expertise in the field of charged-particle radiobiology, also thanks to the extensive exploitation of INFN facilities for accelerator-based radiobiology studies in Legnaro (LNL) and Catania (LNS). The Gran Sasso INFN facility (LNGS) is also involved in radiobiology research with an experiment on low doses and adaptive response. The future Italian hadrontherapy center in Pavia (CNAO), which has been successfully built with a large contribution by INFN, will be the ideal facility for charged-particle radiobiology experiments in the energy range 200–400 MeV/n, *i.e.* of interest for both hadrontherapy and space radiation protection. The INFN expertise in the field is clearly demonstrated by the success in terms of scientific publications and participation in European collaborative projects.

The total number of the participants amounted to 120, who were welcomed by the directors of the INFN section of Trieste, Andrea Vacchi, and of the Department of Physics, Livio Lancieri. The number of participants was much higher than expected, and this is a sign of an increasing interest in the field, involving both experimental researchers and experts in calculation and modeling (especially Monte Carlo). It is clear that radiobiology and its applications are becoming a driving force within INFN, and the past commitment of CSN5 in selecting and supporting worth proposals has been well rewarded. Although the increasing interest in the field is obviously an extremely positive signal, the risk of proliferation of too many topics, sometimes even duplication of similar experiments by

different proposals, should be carefully considered in future evaluation. The involvement of new groups in the field is welcome as they bring new ideas and expertise, and we would like to encourage keeping these efforts along the mainstream of charged-particle radiobiology and its applications.

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