EXTENDED ABSTRACTS

Proceedings of the 5th International Workshop: Microbeam Probes of Cellular Radiation Response

Stresa, Lago Maggiore, Italy, May 26–27, 2001

ORGANIZING AND SCIENTIFIC COMMITTEE:
Roberto Cherubini, INFN-LNL, Italy
Andrea Ottolenghi, Universita’ di Milano, Italy
Leslie Braby, Texas A&M University, USA
David Brenner, Columbia University, USA
Barry Michael, CRC-Gray Laboratory, UK

SPONSORS:
ALITALIA, Italy
CARIPLO—Gruppo Intesa—B.C.I. & Fondazione CARIPLO, Italy
Elexind S.p.A., Italy
European Commission, Research Directorate General, Belgium
Goodfellow, U.K.—Prodotti Gianni, Milano, Italy
IBM Italia S.p.A.—Thera S.p.A., Italy
International Association for Radiation Research (IARR)
INFN, Laboratori Nazionali di Legnaro, Legnaro-Padova, Italy
Medical Research Council, UK
Ministero dell’Istruzione, dell’Università e della Ricerca (MIUR), Italy
National Aeronautics and Space Administration
National Cancer Institute, Division of Cancer Biology, DNA and Chromosome Aberrations Branch
National Research Center for Environment and Health (GSF), Germany
Regione Lombardia, Sanità, Italy
Società Italiana Ricerche sulle Radiazioni (S.I.R.R.), Italy
TELECOM Italia, Italy
TNE—Technology Nuclear Electronics, Italy
U.S. Department of Energy
UNESCO-ROSTE
Università degli Studi di Milano, Dipartimento di Fisica, Milano, Italy
Università degli Studi di Pavia, Dipartimento di Fisica Nucleare e Teorica, Italy

The extended abstracts that follow provide a summary of the Proceedings of the 5th International Workshop: Microbeam Probes of Cellular Radiation Response, held in Stresa, Lago Maggiore, Italy, on May 26–27, 2001, which was organized by INFN, Laboratori Nazionali di Legnaro, Italy and Università degli Studi di Milano, Dipartimento di Fisica, Italy.

There is increasing interest in the use of microbeam systems (1, 2), which can deliver beams of different radiations with a spatial resolution of a few micrometers or less, for radiobiological research. Single-particle microbeams can be used to address such questions as the relative sensitivities of different parts of the cell (e.g. nucleus compared to cytoplasm) and the effects of irradiation on non-hit neighboring (bystander) cells. For particle (e.g. α-particle) beams, irradiation with exactly one (or more) particle per cell can be achieved, allowing questions of risks of very low doses of ionizing radiations, such as radon, to be addressed. Several microbeams are now in operation, and others are being developed. The workshop provided a forum to assess the current state of microbeam technology and current biological applications and to discuss future directions, both technological and biological.

References