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Article title: High resolution genome-wide analysis of genetic markers and retrospective biological dosimetry of absorbed radiation

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Abstract

In this paper the potentialities offered by DNA arrays for the detection of submicroscopic structural chromosome aberrations have been evaluated as a retrospective dose estimation of human exposure to ionizing radiation. To this aim we performed studies in established human cell cultures. We studied the effects of ionizing radiation (at doses 2-5 Gy) on immortalized lymphocyte cell lines using accelerated protons, in modulated beams. We determined cell growth after irradiation, morphological cell changes, clonogenic cell survival (by colony-counting), flow-cytometer cell cycle, apoptosis, necrosis, evaluation of genome-wide DNA copy numbers in >1.800.000 genetic markers by high density oligonucleotide SNP arrays.