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Activity report for A RadoNorm short course entitled:

CELET: Cellular effects of high and low LET ionising radiation – introduction to radiation biology

Stockholm University, Sweden

14.11.2022 – 25.11.2022

The RadoNorm course aimed to provide a comprehensive overview of the state-of-art techniques used in studying genotoxic effects of ionising radiation, which is of relevance to RadoNorm and the broad field of radiation research. The course entailed a series of lectures combined with hands-on practical laboratory work. The lectures covered various aspects of Low and High LET ionizing radiation, methods of measuring them, methods of assessing the induction of genotoxic damages, methods of data analysis, and other various topics of relevance.

While practical work spanned basic dosimetric measurements and different techniques of exposing cells to gamma rays and alpha particles. The dosimetry measurements covered high activity radio-active sources, effects of shielding on the emitted particles, dose-rates as a function of distance, and Radon measurements with respect to Radon build-up and disintegration products. As well as different techniques for exposing the cells to ionizing radiation and assessment of the genetic damages induced due to the exposure to the various sources of ionizing radiation. The genetic damages were assessed through different comprehensive practical methods such as analysis of chromosomal aberration using conventional light microscopy, micronuclei formation assay as an indication of accumulative genetic damage. While fluorescence microscopy was used for Fluorescence in-situ Hybridization (FISH-assay) for differentiating between stable and unstable type chromosomal aberrations, and detection of gamma-H2AX foci as an indication of DNA damage and DNA-repair efficiencies while using an automated analysis method (ImageJ software and a Foci counting plug-in).

On the other hand, the 2-week course included a final group presentation on each of the above-mentioned topics which strongly enabled the participants to communicate and share skills and experiences. Furthermore, during the course period, multiple after-work social gatherings were organized aiming for the participants to communicated, share their scientific expertise, and form a communication network that will hopefully lead to fruitful future collaborations.