Neutron irradiations of in-vitro samples at Institut Laue-Langevin

Maria Pedrosa-Rivera[1,2] , Ignacio Porras[1], Javier Praena[1], Maria J. Ruiz-Magaña[1], Maria C. Ruiz-Ruiz[1], Trevor Forsyth[2], Ulli Köster[2]

[1] *Universidad de Granada, Granada, Spain*

[2] *Institut Laue-Langevin, Grenoble, France*

E-mail: mpedrosa@ugr.es

Cold neutron beam at Institut Laue-Langevin (ILL) has proved to be a suitable facility where to perform in-vitro irradiation experiments. The beam of high flux ($\sim 10^9$ $ncm^{-2}s^{-1}$), low-energetic neutrons ($\sim$ meV), no fast neutron contamination and almost no gamma component, make it a very good place to obtain radiobiology data for low-energy neutrons and test boron compounds. The designed set-up allows a very accurate dose estimation and the biology lab placed in the reactor guide hall facilitates the experiment management.

A series of experiments have been carried out during the last two years. One of the goals was to obtain data for thermal RBE of different cell lines. In addition, irradiation of cells with BPA and other boron compounds gave data for the compound-dependent boron RBE. Finally, an innovative experiment allowed for the first time to isolate the effect of one of the main reactions of neutrons in the tissue: neutron capture in nitrogen 14.

The results of these experiments are going to be shown as well as future ideas for new experiments at ILL and set-up improvements.