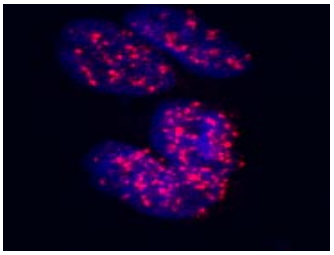
EXJOBB/MASTER THESIS PROJECT

What affects treatment in colorectal cancer cells?



Sara Sahlberg, Biomedical Radiation Sciences, Rudbeck Laboratory, Uppsala University, 75185 Uppsala;
Phone: 018-471 3837; 073-7447090
E-mail: sara.sahlberg@bms.uu.se

Colorectal cancer is the third most common type of cancer in the world. However, patients respond differently to treatment dependent on stage of disease as well as mutation status of several genes. To be able to individualize the treatment for each patient there is a great need to find prognostic markers e.g. if mutations are connected to treatment outcome. The focus of this project is to study the effect of radiation, in terms of cell-survival, DNA-repair rate and protein signaling in colorectal cancer cell-lines with different genetic knock-outs.

Cellular response to DNA damage is complex and relies on several protective responses to counteract the harmful effects of DNA damage. These include DNA damage recognition, DNA repair, and induction of signaling cascades leading to cell cycle checkpoint activation, apoptosis, and stress related responses. This will either lead to cell-death, or the cell might survive due to altered protein expression that enables the cell to keep growing and dividing.

You will used several techniques such as tumor cell-culturing, western blot, immunohistochemistry and flow cytometry for protein detection, cell-survival assays and DNA repair assays.

The project will start at spring-term 2012