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'Junk' cells can help fight prostate cancer

CELLS once dismissed by scientists as "junk" could hold the key to a more effective way to fight prostate cancer, according to a study.

The cancer is the most commonly diagnosed in men and kills more than 11,000 in this country every year.

It is diagnosed in about 42,000 British men every year, a third of whom receive radiotherapy. But one in three of those will see their cancer return after treatment.

Researchers at the University of York have identified how some tiny regulatory molecules in cells can make prostate cancers resistant to radiotherapy.

But by manipulating levels of these cells that can either switch off genes to allow treatment to be effective or switch them on to make them resistant, it is hoped that cancer cells can be killed to stop the disease returning.

The study found that tiny molecules - known as micro-RNAs - were linked to the resistance to radiotherapy.

Every cell has hundreds of the molecules, which were once regarded as "junk" by scientists, but are now considered vital for the organisation of the various tissues in the body, instructing genes when and where to be active.

The study found that these were the switch which enabled cells to react very

rapidly to changes in their environment, such as that produced by cancer treatments.

Previous research has found that all prostate cancers contain at least four different cell types, including the cancer stem cells which resist most current treatments.

By looking at the micro-RNAs present in each of the cell types individually, it was found that some micro-RNAs acted in a positive manner, switching off genes which could make the stem cells susceptible to radiotherapy.

By manipulating the levels of these critical micro-RNAs, it should be possible to kill greater numbers of cancer stem cells than ever before, reducing the number of patients whose tumours recur after radiotherapy.

Prof Norman Maitland said: "Doctors don't know which patients are going to relapse - and the reason they relapse is probably because the radiotherapy is not focused on the stem cell, it is focused on the whole tumour.

"We think that by exploiting this new knowledge we can make radiotherapy more effective."

The research used donated tissues from cancer patients and the results were published in *European Urology* and the *British Journal of Cancer*.