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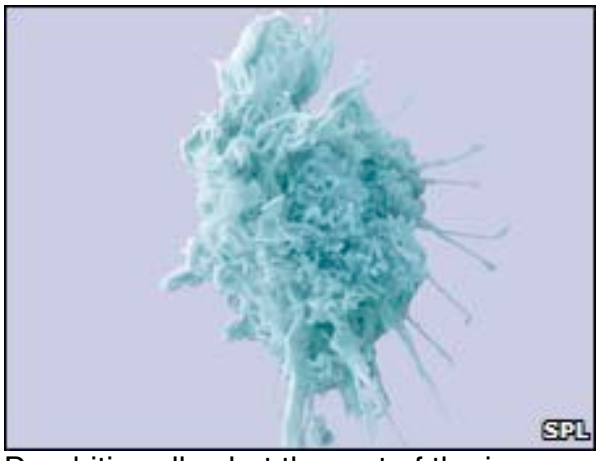
Cancer 'danger receptor' found



Dendritic cells alert the rest of the immune system to an invader

A "danger receptor" that may kick-start an immune reaction to cancer in the body has been found by UK researchers.

It picks up signs of cell death caused by injury or tumours and mobilises the body's defences, Nature reports.

The finding may explain why some tumour-killing drugs partly work by setting off an immune response.

Better understanding of the receptor could help develop cancer treatments that harness the immune system, the London Research Institute team said.

Cell death is a normal process in the body which keeps growth and repair ticking over and keeps tissue healthy.

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Dr Caetano Reis e Sousa, study leader

But sometimes there is an abnormal type of cell death called necrosis.

It has been thought for many years that the body somehow senses this abnormal cell death and sets off an immune reaction.

From an evolutionary point of view this would make sense as injury puts the body at risk of infection and an immune response would be a sensible precaution.

However, until now no receptor capable of detecting this abnormal cell death had been found.

The researchers discovered that the DNGR-1 receptor on a type of immune cell

called a dendritic cell mobilises an immune response after coming across this abnormal cell death.

Dendritic cells act as messengers, alerting other types of immune cells to kill invaders, such as viruses and bacteria.

Trigger

The researchers said tumours could also trigger this type of immune reaction because they often contain clusters of cells undergoing this type of cell death as they have a limited blood supply.

Dr Caetano Reis e Sousa, lead author based at Cancer Research UK's London Research Institute, said: "After a 15-year hunt, we've identified the first 'danger receptor' - one which senses abnormal cell death and then triggers an immune response.

"The detection of 'danger' could explain some situations when a tumour triggers an immune reaction against itself."

He said manipulating this system could be beneficial in treating cancer but also in other areas, such as preventing rejection in organ transplantation.

"There is a theory that some cancer-killing drugs kill tumour cells in such a way that triggers the immune system against them so they have a double whammy."

Dr Lesley Walker, director of information at Cancer Research UK, said: "The concept of using the body's immune system to fight cancer has been around for decades, but advances in recent years have made this field of research a very exciting one.

"The results of this study are really important scientifically and a step towards understanding how to manipulate the immune system to treat cancer in the future."