

Scientists expose important new weak spot in cancer cells

December 5 2011

(Medical Xpress) -- Cancer Research UK scientists have discovered that cancer cells can ‘bag up and bin’ a toxic protein to cheat death – revealing a new Achilles heel in cancer cells that could be targeted for treatment, reveals research in [Nature Cell Biology](#) today.

The scientists at the Edinburgh Cancer Research UK Centre at the University of Edinburgh removed a [protein](#) called FAK from mice and from [cancer cells](#) grown in the lab. FAK is produced in much higher amounts in cancer cells and partners with another protein, SRC. They work together to cause the tumour to grow and spread.

Removing or blocking FAK increases levels of un-partnered ‘free’ SRC, which becomes toxic in high amounts. This should, in theory, trigger automatic cancer cell death.

But the team discovered that cancer cells can get rid of the problematic SRC protein – and survive.

They revealed that cancer cells use a process called autophagy to bag up and digest excess SRC. Essentially the cells have hijacked a normal housekeeping process, normally used to digest proteins and recycle nutrients.

The cancer cells placed protective membrane ‘sacks’ round cell waste, and filled them with chemicals to break up and recycle the contents. It was not previously known that cancer cells could dispose of the toxic

SRC protein this way.

The research suggests that blocking FAK, whilst also stopping cells disposing of SRC, may provide a powerful new route to destroy cancer cells.

Paper author, Professor Margaret Frame, Cancer Research UK scientist at the Edinburgh Cancer Research UK Centre, said: “We’ve shown that cancer cells can adapt to the problems caused by stress, by hijacking normal cell waste disposal to ‘bag up and bin’ toxic proteins.

“This reveals a previously unknown weak spot in cancer cells – and a potential new pathway to tackle cancer.

“Combining drugs already in development, which block a protein called FAK, with techniques to stop cancer cells removing excess toxic SRC, would kill them.”

Dr. Julie Sharp, Cancer Research UK’s senior science communications manager, said: “When healthy cells get old or get injured they automatically commit suicide so that mistakes can’t be passed on to new cells. But cancer cells have found various ways to continue to grow and divide.

“Thanks to the generosity of the public’s support we’re able to invest in world-leading research such as this. By learning more about how cancer cells cheat death, we hope we’ll discover new ways to prevent and treat the disease.”

More information: Autophagic targeting of SRC promotes cancer cell survival upon reduced FAK signalling. Sandilands et al. *Nature Cell Biology*.

Provided by Cancer Research UK

Citation: Scientists expose important new weak spot in cancer cells (2011, December 5) retrieved 26 April 2024 from

<https://medicalxpress.com/news/2011-12-scientists-expose-important-weak-cancer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.