**Scientists find key protein that suppresses prostate cancer growth in the laboratory**

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**Cancer researchers have discovered an important protein, produced naturally inside cells, that appears to suppress the growth of prostate cancer cells in the laboratory. The findings, published tomorrow in the journal Cancer Research, offer promising leads for research towards new treatments.**

Prostate cancer is the most common cancer among men in the UK, with 37,500 men diagnosed with the disease every year. Many prostate cancers are slow growing, but in some cases the cancer is aggressive and spreads to other parts of the body, such as the bone. These cases are much more likely to be fatal.

In the new study, scientists at Imperial College London found that a protein called FUS inhibits the growth of prostate cancer cells in the laboratory, and activates pathways that lead to cell suicide.

The researchers also looked for the FUS protein in samples from prostate cancer patients. They found that in patients with high levels of FUS, the cancer was less aggressive and was less likely to spread to the bone. Higher levels of FUS also correlated with longer survival. The results suggest that FUS might be a useful marker that can give doctors an indication of how aggressive a tumour will be.

“At the moment, there’s no way to say whether a prostate tumour will kill you or be fairly harmless,” said [Dr Charlotte Bevan](http://www1.imperial.ac.uk/medicine/people/charlotte.bevan/), senior author of the study, from the [Department of Surgery and Cancer](http://www1.imperial.ac.uk/surgeryandcancer/) at Imperial College London. “Current hormonal therapies only work for a limited time, and chemotherapy is often ineffective against prostate cancer, so there’s a real need for new treatments.

“These findings suggest that FUS might be able to suppress tumour growth and stop it from spreading to other parts of the body where it can be deadly. It’s early stages yet but if further studies confirm these findings, then FUS might be a promising target for future therapies.”

Prostate cancer depends on male hormones to progress as these hormones stimulate the cancer cells to divide, enabling the tumour to grow. Treatments that reduce hormone levels or stop them from working are initially effective, but eventually the tumour stops responding to this treatment and becomes more aggressive.

Dr Bevan and her team began by exposing prostate cancer cells to male hormones and looking at how the levels of different proteins changed. They discovered that the hormones made the cells produce less of the FUS protein, and examined further whether FUS might influence cell growth by inserting extra copies of the gene for FUS into cells grown in culture. They found that making the cells produce more FUS led to a reduction in the number of cancer cells in the dish.

Greg Brooke, first author of the study, from the Department of Surgery and Cancer at Imperial College London said: “Our study suggests that FUS is a crucial link that connects male hormones with cell division. The next step is to investigate whether FUS could be a useful test of how aggressive prostate cancer is. Then we might look for ways to boost FUS levels in patients to see if that would slow tumour growth or improve response to hormone therapy.

“If FUS really is a tumour suppressor, it might also be involved in other cancers, such as breast cancer, which has significant similarities with prostate cancer.”

The study was funded by Prostate Action, the Medical Research Council, the Imperial College Experimental Cancer Medicine Centre (set up with a grant from Cancer Research UK and the Department of Health) and the Prostate Cancer Charity.

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**Notes to editors:**

1. Journal reference: G.N. Brooke et al. “FUS/TLS Is a Novel Mediator of Androgen-Dependent 3 Cell-Cycle Progression and Prostate Cancer Growth” Cancer Research, February 2011.

2. About Imperial College London

Consistently rated amongst the world's best universities, Imperial College London is a science-based institution with a reputation for excellence in teaching and research that attracts 14,000 students and 6,000 staff of the highest international quality. Innovative research at the College explores the interface between science, medicine, engineering and business, delivering practical solutions that improve quality of life and the environment - underpinned by a dynamic enterprise culture.

Since its foundation in 1907, Imperial's contributions to society have included the discovery of penicillin, the development of holography and the foundations of fibre optics. This commitment to the application of research for the benefit of all continues today, with current focuses including interdisciplinary collaborations to improve global health, tackle climate change, develop sustainable sources of energy and address security challenges.

In 2007, Imperial College London and Imperial College Healthcare NHS Trust formed the UK's first Academic Health Science Centre. This unique partnership aims to improve the quality of life of patients and populations by taking new discoveries and translating them into new therapies as quickly as possible.

Website: www.imperial.ac.uk   
Twitter: www.twitter.com/imperialspark   
Podcast: www.imperial.ac.uk/media/podcasts

3. About the Medical Research Council

For almost 100 years the Medical Research Council has improved the health of people in the UK and around the world by supporting the highest quality science. The MRC invests in world-class scientists. It has produced 29 Nobel Prize winners and sustains a flourishing environment for internationally recognised research. The MRC focuses on making an impact and provides the financial muscle and scientific expertise behind medical breakthroughs, including one of the first antibiotics penicillin, the structure of DNA and the lethal link between smoking and cancer. Today MRC funded scientists tackle research into the major health challenges of the 21st century. www.mrc.ac.uk

4. About The Prostate Cancer Charity

F or fu rther information contact: Vivienne Francis, Nikki Nagler or Cla ire Blackburn on 0208 222 7136/7670/7687. Out of hours contact: 0798 432 5001. Email: Vivienne.Francis@prostate-cancer.org.uk or Nicola.Nagler@prostate- cancer.org.uk or Claire.Blackburn@prostate-cancer.org.uk

Prostate cancer is the most common cancer diagnosed in men in the UK. Every year in the UK 36,000 men are diagnosed with prostate cancer. One man dies every hour of prostate cancer in the UK.

African Caribbean men are three times more likely to develop prostate cancer than white men.

The Prostate Cancer Charity is striving for a world where lives are no longer limited by prostate cancer. The Charity is fighting prostate cancer on every front - through research, support, information and campaigning.

If you have any queries about prostate cancer, call The Prostate Cancer Charity's confidential Helpline 0800 074 8383 which is staffed by specialist nurses and open from 10am to 4pm Monday to Friday and Wednesdays from 7 - 9pm or visit www.prostate-cancer.org.uk

5. About Cancer Research UK

Cancer Research UK is the world’s leading cancer charity dedicated to saving lives through research

The charity’s groundbreaking work into the prevention, diagnosis and treatment of cancer has helped save millions of lives. This work is funded entirely by the public.

Cancer Research UK has been at the heart of the progress that has already seen survival rates double in the last forty years.

Cancer Research UK supports research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses.

Together with its partners and supporters, Cancer Research UK's vision is to beat cancer.

For further information about Cancer Research UK's work or to find out how to support the charity, please call 020 7121 6699 or visit www.cancerresearchuk.org

6. About Prostate Action

Prostate Action was formed by the merger between Prostate UK and Prostate Cancer Research Foundation in October 2010. It funds research and education to beat prostate disease and is the only national charity dealing with all three prostate diseases. For more information contact Gareth Ellis-Thomas on 020 8394 7971 or [gellis-thomas@prostateaction.org.uk](mailto:gellis-thomas@prostateaction.org.uk)