Nearly half of testicular cancer risk comes from inherited genetic faults

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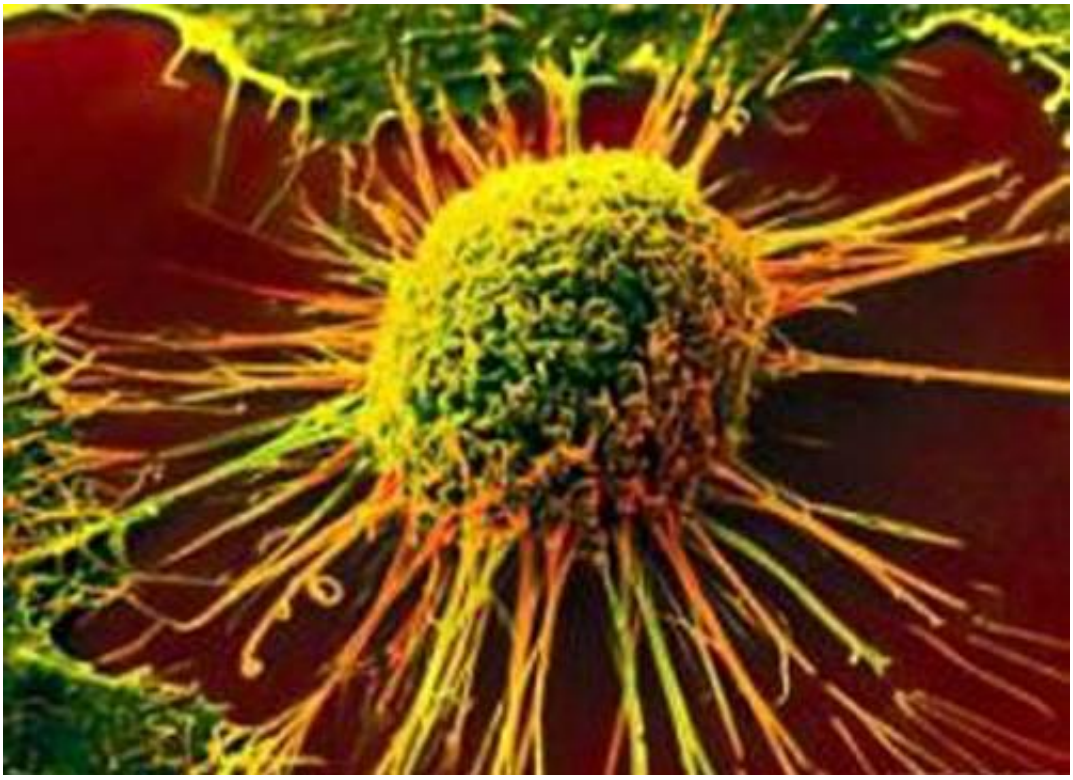

Almost half of the risk of developing testicular cancer comes from the DNA passed down from our parents, a new study reports.

The research suggests genetic inheritance is much more important in testicular cancer than in most other cancer types, where genetics

typically accounts for less than 20 per cent of risk.

The findings suggest testing for a range of genetic variants linked to testicular cancer could be effective in picking out patients who are at substantially increased risk - potentially opening up ways of preventing the disease.

Scientists at The Institute of Cancer Research, London, along with colleagues in Germany, Sweden and the US, used two independent approaches to analyse the risk of testicular germ cell tumours - easily the most common type of testicular cancer.

Their research, published in the journal *Scientific Reports* and funded by the Movember Foundation, The Institute of Cancer Research (ICR) and Cancer Research UK, is the largest study ever to explore testicular germ cell tumours in detail.

Researchers first used statistical analysis to examine patterns of ancestral testicular cancer in family groups across 15.7 million people from the Swedish Population Registry cancer family database, including 9,324 cases of testicular cancer.

They then looked in detail at the genetic code of 6,000 UK men from two previous testicular cancer studies, 986 of whom had been diagnosed with the disease.

The combined analysis revealed that 49 per cent of all the possible factors contributing to testicular cancer risk are inherited.

It found that the inherited risk comes from a large number of minor variations in DNA code, rather than one faulty gene with a big effect.

Although substantial inroads have been made over the last five years at

the ICR into identifying mutations associated with risk of testicular cancer, the study also showed that these known mutations only account for 9.1 per cent of the risk of developing the disease. Therefore the majority of the genetic variants that raise testicular cancer risk have yet to be identified.

Identifying more of these 'hidden' mutations could allow doctors to screen men for testicular cancer risk, increasing the chance of preventing the disease or catching it early.

Dr Clare Turnbull, Senior Researcher in Genetics and Epidemiology at The Institute of Cancer Research, London, said:

"Our study has shown that testicular cancer is a strongly heritable disease. Around half of a man's risk of developing testicular cancer comes from the genes he inherits from his parents - with environmental and behavioural factors contributing to the other half.

"Our findings have important implications in that they show that if we can discover these genetic causes, screening of men with a family history of testicular cancer could help to diagnose those at greatest risk, and help them to manage that risk.

"But our study also shows that much work remains to be done. There are a lot of genetic factors that cause testicular cancer which we are yet to find - so the first step must be to identify the genetic drivers of testicular cancer so we can develop new ways to prevent it."

Sam Gledhill, the Movember Foundation's Global Manager for Testicular Cancer Programmes, said:

"This is a significant development in the fight for a world where no man dies of testicular cancer. Dr Turnbull and her team at the ICR have

generated important evidence to demonstrate that genetic factors might in the future help identify men and boys who have a higher risk of developing testicular cancer. These discoveries help to unlock the mysteries of this relatively poorly understood cancer and may ultimately identify potential treatment targets to fight this disease.

Provided by Institute of Cancer Research