# Scottish researchers uncover how ‘shapeshifting’ bowel cancer cells drive metastasis



Scottish scientists have made a significant advancement in understanding bowel cancer, revealing critical insights that could influence treatment strategies. Funded by Cancer Research UK and published in *Nature*, their research highlights a pivotal process in aggressive bowel cancer—the phenomenon of cellular plasticity. This occurs when cancer cells lose their original identities and transform into variants resembling skin or muscle cells, a change that plays a crucial role in the metastasis, or spread, of the disease.

The findings indicate that this "shapeshifting" capability enhances the cancer's ability to invade other parts of the body, thereby complicating treatment options. It is hoped that by identifying the underlying mechanisms of this transformation, researchers will be able to develop therapeutic strategies that not only halt the process but also render existing treatments more effective against aggressive forms of bowel cancer. Dr. Kevin Myant, from the Institute of Genetics and Cancer at the University of Edinburgh, emphasised the urgency of this research, noting a troubling rise in bowel cancer diagnoses among younger individuals. In Scotland alone, approximately 4,000 new cases arise each year, contributing to the country's status as disproportionately affected by the disease.

The study specifically examined the impact of a gene known as Atrx, which has been linked to more aggressive forms of bowel cancer. Experiments conducted on mice and human tissue samples revealed that the absence of this gene correlates with an increase in metastatic tumours that spread from the bowel to critical sites such as the liver and diaphragm. Lead researcher Dr. Patrizia Cammareri elaborated on the implications of the research, suggesting that by adopting protective characteristics from skin cells—which are more resilient to environmental pressures—the cancer cells gain a significant advantage that facilitates dissemination through the body.

This urgent need for enhanced understanding and treatment is underscored by a recent study from the American Cancer Society published in *The Lancet Oncology*, which reported a concerning increase in early-onset bowel cancer rates across multiple countries. The rates are rising notably among younger women in Scotland and England, indicating a shift in the demographic landscape of the disease.

In addition to these findings, other research from the University of Glasgow and Cancer Research UK's Beatson Institute has shed light on how bowel cancer cells manipulate the immune system to elude detection. By rewiring immune cells, the tumour prevents them from effectively recognising and attacking cancerous cells. This key discovery, also published in *Cancer Immunology Research*, paves the way for potential treatments aimed at reactivating these immune cells, further offering hope for improved patient outcomes.

As part of a broader push for advancements in bowel cancer research, initiatives led by Cancer Research UK involve collaborations among various institutions, including Glasgow and Edinburgh universities. Such collaborative efforts are essential given that bowel cancer is the second most common cause of cancer death in the UK, responsible for around 16,800 deaths annually.

Dr. Catherine Elliott, Director of Research at Cancer Research UK, noted the importance of diagnosing cancer at an early stage to maximise treatment effectiveness. She expressed optimism that studies like these could lead to innovative methods for preventing the spread of the disease, ultimately enhancing survival rates for patients.

Current efforts are focused not only on halting the progression of aggressive forms of bowel cancer but also on improving the stratification of therapies through adaptive responses, as illustrated by the recently launched £5.5 million CRC-STARS initiative. This programme aims to unite specialists to develop kinder, more effective treatment strategies for bowel cancer, reflecting a concerted effort across Scotland to tackle this pressing health concern.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.heraldscotland.com/news/25222936.scottish-scientists-make-key-bowel-cancer-discovery/?ref=rss), [[6]](https://www.qub.ac.uk/News/Allnews/2024/groundbreaking-research-revolutionise-bowel-cancer.html)
* Paragraph 2 – [[1]](https://www.heraldscotland.com/news/25222936.scottish-scientists-make-key-bowel-cancer-discovery/?ref=rss), [[2]](https://www.bbc.co.uk/news/uk-scotland-glasgow-west-65960708)
* Paragraph 3 – [[3]](https://www.gla.ac.uk/news/archiveofnews/2023/june/headline_974654_en.html), [[5]](https://www.gla.ac.uk/schools/cancersciences/news/headline_998909_en.html)
* Paragraph 4 – [[1]](https://www.heraldscotland.com/news/25222936.scottish-scientists-make-key-bowel-cancer-discovery/?ref=rss), [[2]](https://www.bbc.co.uk/news/uk-scotland-glasgow-west-65960708), [[4]](https://news.cancerresearchuk.org/2007/07/08/scientists-locate-first-common-bowel-cancer-gene/)
* Paragraph 5 – [[3]](https://www.gla.ac.uk/news/archiveofnews/2023/june/headline_974654_en.html), [[6]](https://www.qub.ac.uk/News/Allnews/2024/groundbreaking-research-revolutionise-bowel-cancer.html)
* Paragraph 6 – [[1]](https://www.heraldscotland.com/news/25222936.scottish-scientists-make-key-bowel-cancer-discovery/?ref=rss), [[7]](https://www.bbc.com/news/uk-scotland-tayside-central-20200438)

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## Bibliography

1. <https://www.heraldscotland.com/news/25222936.scottish-scientists-make-key-bowel-cancer-discovery/?ref=rss> - Please view link - unable to able to access data
2. <https://www.bbc.co.uk/news/uk-scotland-glasgow-west-65960708> - Scottish scientists at the University of Glasgow and Cancer Research UK's Beatson Institute have discovered how bowel cancer cells manipulate the immune system to evade detection. Their research, published in Cancer Immunology Research, reveals that cancer cells rewire immune cells, preventing them from recognising and attacking the tumour. This breakthrough could lead to treatments that reactivate these immune cells, offering new hope for patients. Bowel cancer remains the second most common cause of cancer death in the UK, with approximately 16,800 deaths annually.
3. <https://www.gla.ac.uk/news/archiveofnews/2023/june/headline_974654_en.html> - Researchers at the University of Glasgow and Cancer Research UK's Beatson Institute have solved a longstanding mystery regarding bowel cancer's ability to evade the immune system. Their study, published in Cancer Immunology Research, demonstrates that cancer cells manipulate immune cells to prevent them from recognising and attacking the tumour. This discovery opens the door to potential treatments that could reverse this process, allowing the immune system to target cancer cells more effectively. Bowel cancer is the second most common cause of cancer death in the UK, with around 16,800 deaths each year.
4. <https://news.cancerresearchuk.org/2007/07/08/scientists-locate-first-common-bowel-cancer-gene/> - Scientists funded by Cancer Research UK have identified a common genetic variant that increases the risk of developing bowel cancer. Their findings, published in Nature Genetics, reveal that this variant is present in a significant portion of the population, suggesting that genetic risk contributes to about a third of bowel cancer cases. This discovery could lead to improved prevention, diagnosis, and treatment strategies for the disease.
5. <https://www.gla.ac.uk/schools/cancersciences/news/headline_998909_en.html> - Scientists at the Cancer Research UK Beatson Institute and University of Glasgow have uncovered how bowel cancer cells evade the immune system. Their research, published in Cancer Immunology Research, shows that cancer cells rewire immune cells, preventing them from recognising and attacking the tumour. This breakthrough could lead to treatments that reactivate these immune cells, offering new hope for patients. Bowel cancer is the second most common cause of cancer death in the UK, with around 16,800 deaths annually.
6. <https://www.qub.ac.uk/News/Allnews/2024/groundbreaking-research-revolutionise-bowel-cancer.html> - Scientists from Queen’s University Belfast and the Cancer Research UK Scotland Institute in Glasgow have made groundbreaking discoveries into tumour biology that may lead to more effective personalised medicine approaches for bowel cancer. Their study, published in Nature Genetics, identifies previously unseen molecular patterns in tumour tissue, providing new insights into treatment response and disease progression. This research could revolutionise how bowel cancer is diagnosed and treated, offering better outcomes for patients.
7. <https://www.bbc.com/news/uk-scotland-tayside-central-20200438> - Scientists at the University of Dundee have conducted research that could improve bowel cancer treatment. Their study focused on the K-RAS gene, finding that altering its behaviour can enhance the effectiveness of certain chemotherapy drugs against bowel cancer cells. This research, conducted for the National Cancer Research Institute, suggests that targeting the K-RAS gene could provide new avenues for treatment. Bowel cancer is one of the most commonly diagnosed cancers in the UK, with over 41,000 new cases each year.