Researchers make breakthrough discovery in fight against bowel cancer

May 31 2017

Professor Mark Lawler, Queen's University Belfast. Credit: Queen's University Belfast

New research led by Queen's University Belfast has discovered how a genomic approach to understanding bowel (colorectal) cancer could

improve the prognosis and quality of life for patients.

For clinicians, treating patients with bowel cancer can be particularly challenging. Professor Mark Lawler, Chair in Translational Genomics, Centre for Cancer Research and Cell Biology at Queen's and joint Senior Author on the study explains: "Currently patients with colorectal cancer are offered chemotherapy treatment. While this treatment may be successful for some patients, for others it will have no effect on fighting the cancer, though the patients may suffer debilitating side effects such as nerve damage that can result in a loss of sensation or movement in a part of the body. A 'one size fits all' approach isn't a viable option if we are to effectively tackle this disease."

Researchers at Queen's, in collaboration with the University of Oxford and the University of Leeds have made a significant advance in the treatment of bowel cancer. The study, which has been published in the high impact journal *Nature Communications*, has shown how defining precise gene signatures within bowel cancer cells can allow us to develop novel prognostic and predictive markers for bowel cancer and help to drive personalised medicine approaches.

Dr Philip Dunne, Senior Research Fellow at Queen's said: "Through analysing the molecular and genetic data generated from patient tissue samples, we have discovered that there are different subtypes of bowel cancer. This research unequivocally identifies robust gene signatures that can be used to inform patient management. It will allow us to identify particular gene signatures that indicate sensitivity or resistance to specific therapies. Thus, we can tailor treatment to the individual patient, maximising its effectiveness while minimising potential side effects."

Dr Catherine Pickworth, science information officer at Cancer Research UK, a funder of the study, added: "Personalised medicine aims to give the best treatment to each patient, sparing people unnecessary therapy if

it won't help.

"This study is a step forward in achieving this, giving us genetic signatures to look out for in bowel cancer patients. The next steps will be to find out which treatment works best for each genetic signatures so that cancer treatments can be tailored to each patient, so they have the best chance of beating cancer."

Bowel cancer is the fourth most common cancer in the UK, with 41,200 people newly diagnosed each year. A number of treatment options are available but mortality rates remain high, with bowel cancer the second most common cause of cancer death in the UK.

This research was performed as part of Stratified Medicine in Colorectal Cancer (S:CORT), an MRC-Cancer Research UK funded stratified medicine consortium, bringing together the best of UK science and clinical care in bowel cancer to develop personalised medicine treatment approaches in this common malignancy.

S:CORT involves key partnerships with patients and patient advocacy groups. Ed Goodall, a survivor of bowel cancer and a member of S:CORT explains: "In the past, a tumour was a tumour. Patients are offered chemotherapy and this may not be effective or necessary depending on the patient yet they will still endure all the horrors this treatment can cause including nausea and hair loss.

"If the oncologist knows more about the subtype of bowel cancer, they will know whether the treatment will be necessary or effective. From a patient point of view, discovering the subtypes of this cancer is really ground breaking work because it will have massive implications for patient care and treatment."

Professor Tim Maughan, Professor of Clinical Oncology at the

University of Oxford and Principal Lead of the S:CORT Consortium said: "This research emphasises how a collaborative approach can give significant insight into bowel cancer disease biology, but also to begin to translate this knowledge into clinically-relevant applications. As part of the work of the S:CORT consortium, we will now focus on making sure that the research is put into practice so that it can become part of the standard of care for patients."

Deborah Alsina MBE, Chief Executive of Bowel Cancer UK, the UK's leading bowel cancer research charity and a partner in S:CORT said: "This important study highlights how increasing our understanding of what makes normal cells go wrong is key to developing new approaches that can improve outcomes for patients. With nearly 16,000 people dying from bowel cancer each year, it is essential that we increase our understanding of what drives the disease and then improve and extend the range of treatment options available. The results of this study take us a step closer to achieving this."

More information: *Nature Communications* (2017). DOI: 10.1038/NCOMMS15657

Provided by Queen's University Belfast