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Attacking bowel cancer on two fronts

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Stem cells in the intestine, which when they mutate can lead to bowel cancers, might also be grown into transplant tissues to combat the effects of those same cancers, the UK National Stem Cell Network (UKNSCN) annual science meeting will hear today.

Professor Nick Barker of the Institute of Medical Biology in Singapore will explain how he and his team identified that the stem cells which are crucial to maintaining a healthy intestine are also the site at which bowel cancers first begin, and how he also hopes to use healthy stem cells to regenerate tissues to help patients with Crohn's disease and some cancers.

Having discovered a gene that is only turned on in these particular stem cells Professor Barker and his team have been able to isolate the cells in mice and grow small pieces of intestine in the lab. The researchers hope that if they are able to grow larger pieces, they will be able to produce transplant tissues to replace damaged intestines.

Professor Barker explains: "Processing our dinner every day is a tough job so the lining of our intestines quickly get worn out. To keep the intestine working stem cells in little pockets along the surface replace the lining, cell by cell, about once a week.

"We already knew these stem cells existed for a while we didn't know much about them because it was difficult to distinguish them from all of the other types of cells in our intestines. Our team was able to single them out and study them because we discovered a gene that is only

turned on in these particular stem cells."

Once the researchers had found this gene they were able to track where the stem cells occur throughout the body finding that, as well as the intestine, the stomach lining and in hair follicles, the cells were also present in bowel tumours.

Professor Barker continues: "We hope that studying these stem cells will be doubly useful: One day we hope to grow large enough pieces in the lab to form replacement tissues for transplant; and by studying the cells we will be able to find new ways to prevent them from mutating and hence leading to cancer.

"Bowel cancer is the third most common type of cancer in England and an estimated 38,000 new cases are diagnosed each year. We know these stem cells are both implicated in causing the cancer but that they also could be useful for treating disease so we hope that studying them will help us to understand how to attack the disease on two fronts.

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