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Gut bacteria potential allies against cancer

BASEL (News agencies) – Top scientists at Roche Holding AG and AstraZeneca Plc are sizing up potential allies in the fight against cancer: The trillions of bacteria that live in the human body.

"Five years ago, if you had asked me about bacteria in your gut playing an important role in your systemic immune response, I probably would have laughed it off," Daniel Chen, head of cancer immunotherapy research at Roche's Genentech division, said in a phone interview. "Most of us immunologists now believe that there really is an important interaction there."

Two recent studies published in the journal *Science* have intrigued Chen and others who are

developing medicines called immunotherapies that stimulate the body's ability to fight tumours.

In November, University of Chicago researchers wrote that giving mice *Bifidobacterium*, which normally resides in the gastrointestinal tract, was as effective as an immunotherapy in controlling the growth of skin cancer. Combining the two practically eliminated tumour growth.

In the second study, scientists in France found that some bacterial species activated a response to immunotherapy, which didn't occur without the microbes.

That's increased drugmakers' interest in the human microbiome – the universe of roughly 100 trillion good and bad bacteria, fungi and viruses that live on and inside the body. Roche

is already undertaking basic research in the field and plans to investigate the microbiome's potential for cancer treatment, Chen said.

"Certainly, we are already scanning the space for interesting opportunities as the science continues to emerge," he said. "We are very interested in testing these in a controlled setting."

Some experienced investors are sceptical and see the possibility of an approved product for cancer to be at least five years away.

"To therapeutically influence the microbiome long-term in humans is a big hurdle," said Sander van Deventer, managing partner at venture-capital firm Forbion Capital Partners. "The microbiome is very stubborn. Everything we've done so far has only had a temporary effect."

Earlier in his career, van Deventer chaired the department of gastroenterology and hepatology at the Academic Medical Centre in Amsterdam, the first clinic in the world to perform faecal transplants to fight hospital infection *Clostridium difficile* with good bacteria. Forbion hasn't yet invested in any microbiome biotech, "but we're looking at all of them all the time," he said.

Efforts are under way to turn bacteria into regulated pharmaceutical products to treat illnesses of the gut, where the microbes reside.

Nestle SA last January invested US\$65 million (RM267 million) in Cambridge, Massachusetts-based Seres Therapeutics Inc, which is developing a treatment for *Clostridium difficile*, which affects the digestive system.