Gastric Cancer-Specific Stem Cell Identified

A team of scientists has identified the cancer-specific stem cell that causes gastric cancer, opening up the possibility of using it as a target for developing new drugs.

In the study, published in the May issue of *Cancer Research* (***2014;74-2630-2641***), the researchers, led by Chan Shing Leng, PhD, Research Assistant Professor at Cancer Science Institute of Singapore, showed for the first time that a cancer-specific variant of a cell surface protein, CD44v8-10, is a biomarker for gastric cancer stem cells but not normal cells. The team notes that the study is also the first to be conducted with human gastric tissue specimens.

The researchers—first author is Wen Min Lau—explained that it has been known that many cancer cell types express high levels of the CD44 cell surface protein, which marks cancer stem cells thought to be responsible for resistance to current cancer therapy and tumor relapse. The standard form of CD44, CD44s, is found in high abundance on normal blood cells, but it was previously not known which form of CD44 is found on cancer stem cells.

As described in a news release, the researchers analyzed 53 patient tissue samples in conjunction with patient-derived xenograft models derived from intestinal-type gastric cancer. The information notes that the Singapore team is one of the few groups in the world to have a relatively large collection of patient-derived xenograft models for gastric cancer and is the first to use these models for identification of gastric

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cancer stem cells. Eight cancer cell lines were used in the study, including six new cell lines that were established by the researchers.

A cancer-specific CD44 variant, CD44v8-10, was discovered, which marks gastric cancer stem cells but not normal cells. CD44v8-10 promotes cancer cell growth and it is significantly more abundant in gastric tumor sites compared with normal gastric tissue, which makes it easily detectable, the researchers noted.

"With our findings, we can now work on developing drugs that would recognize and attack the cancer stem cells only, reducing the side effects on normal cells. With additional funding, we aim to have a drug that can show efficacy in our models within three years," Chan said.

In the next phase of the research, he and his colleagues will try to develop an antibody drug that targets CD44v8-10. The research team also hopes to establish more patient-derived xenograft models to achieve extensive coverage of the patient spectrum in Singapore, since the level of CD44v8-10 varies among patients.

> The Singapore team is one of the few groups in the world to have a large collection of patient-derived models for gastric cancer and is the first to use them for identification of gastric cancer stem cells.