MedicalXpress

# New clues on how cancer spreads

October 12 2010

Researchers have dramatically advanced medicine's understanding of how cancer migrates, showing that cancer cells are accompanied by growth-enabling stromal cells when they travel in the bloodstream to new sites in the body.

The discovery by medical scientists at the University of New South Wales (UNSW) challenges the prevailing belief that metastasis is the sole preserve of cancer cells. The finding has implications for all solid tumours and could lead to more effective treatments for some of our most aggressive cancers.

The researchers found that "enabling" pancreatic stellate cells (PSCs) from primary tumours have the ability to invade blood vessels to travel via the bloodstream to distant sites, where they create a hospitable environment for cancer cells to seed and grow. The findings, presented at the annual scientific meeting of the American Pancreatic Association, appear in the American Journal of Pathology.

"It's always been presumed that only cancer cells travel in metastasis. But we've shown for the first time that stellate cells also travel in tandem with the cancer cells," said the study's chief investigator and Director of UNSW's Pancreatic Research Group, Professor Minoti Apte.

"It's like the cancer brings its own luggage with it – the stellate cells – allowing it to settle in a new place more comfortably and more quickly."

In 2008, Professor Apte and her team identified PSCs as the cause of the

fibrous growth, or stroma, prominent in pancreatic tumours. They discovered that the PSCs caused tumours to grow much faster and bigger and also resulted in more metastasis.

In the current study, PhD student Zhihong Xu used a gender mismatch approach to investigate whether these enabling cells could migrate. Female mice were injected in the pancreas with a female cancer cell line and male pancreatic stellate cells. After seven weeks, metastatic nodules in all mice showed the presence of Y chromosome-positive (male) cells.

"These could only have come from the original tumour and the male pancreatic stellate cells" Professor Apte said. "The challenge now is to stop PSCs from aiding and abetting pancreatic cancer cells – not only in the primary tumour site but also to prevent or diminish cancer growth in distant sites."

Provided by University of New South Wales