

## 3-D research model tackles prostate cancer spread

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Shirly Sieh, a PhD student at IHBI, is studying the way cancer cells escape from the prostate through the bloodstream to form tumour colonies, most often in the spine and long bones.

"It is an innovative study which uses a [tissue engineering](#) platform technology developed by IHBI's Professor Dietmar W. Hutmacher in order to investigate the interaction between bones and cancer cells," Ms Sieh said.

"Tissue-engineered [bone](#) provides the 3D architecture for the cancer cells which more closely resemble bone metastasis instead of growing the cancer cells and bone cells on a flat Petrie dish.

"I am growing prostate cancer cells on the tissue-engineered bone to observe the interactions between the cells and the surrounding tissue so it is a way of mimicking the cancer cells invading the bone environment."

Ms Sieh said it was still not clear to researchers how bones and cancer cells interacted.

"With this 3D method we can see if and how the cancer cells 'set up home' in the [bone cells](#)," she said.

"We want to study how the cancer cells degrade the matrix, or the mix of proteins and growth factors produced by these cells, and remodel the environment to suit the cancer cells to grow a tumour."

Ms Sieh said scientists also wanted to understand why prostate cancer cells were attracted to the bone sites. She and Amy Lubik, a PhD student supervised by Professor Colleen Nelson, are studying the effect the cancer cells in the bone have on male hormone production, particularly on the hormone, androgen.

"People with advanced cancer who have had prostate removal surgery should have low levels of androgen and the cancer cells should be suppressed. However, sometimes the cancer cells do recur," she said.

"We think it might have something to do with the fact that the cancer cells are very sensitive to androgen and even low levels of androgen in the body could promote the growth of these cancer cells."

Ms Sieh said previous research had found that when the [prostate cancer cells](#) changed the bone environment they eventually induced more bone formation.

"But it is very abnormal growth which can cause bone fractures and painful spinal compression for the person. "

Source: Queensland University of Technology ([news](#) : [web](#))

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