Scientists can now differentiate between healthy cells and cancer cells

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One of the current handicaps of cancer treatments is the difficulty of aiming these treatments at destroying malignant cells without killing healthy cells in the process. But a new study by McMaster University researchers has provided insight into how scientists might develop therapies and drugs that more carefully target cancer, while sparing normal healthy cells.

Mick Bhatia, scientific director of the McMaster Stem Cell and Cancer Research Institute in the Michael G. DeGroote School of Medicine, and his team of investigators have demonstrated - for the first time - the difference between normal stem cells and cancer stem cells in humans.

The discovery, published in the prestigious journal *Nature Biotechnology* today, could eventually help with the further customization and targeting of cancer treatments for the individual patient. It will immediately provide a model to discover drugs using robotic screening for available molecules that may have untapped potential to eradicate cancer.

"Normal stem cells and cancer stem cells are hard to tell apart, and many have misconstrued really good stem cells for cancer stem cells that have gone bad - we now can tell the ones masquerading as normal stem cells from the bad, cancerous ones," said Bhatia.

"This also allows us to compare normal versus cancer stem cells from humans in the laboratory - define the differences in terms of genes they express and drugs they respond to. Essentially, we can now use this to find the "magic bullet", a drug or set of drugs that kill cancer stem cells first, and spare the normal healthy ones," he said.

"McMaster is uniquely positioned for this discovery platform, and this was the missing ingredient - we have one of the best screening/robotic platforms, chemical libraries and expertise in professors Eric Brown and Gerry Wright, who have discovered molecules to combat infectious disease. Now we can combine it all. This team now aims to kill cancer."

Source: McMaster University

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