

# Virtual biopsy cuts out need for diagnostic surgery

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A non-invasive diagnostic tool to detect surface cancers quickly and painlessly using technology currently employed by gyms to calculate body composition has been developed by a QUT PhD medical physics researcher.

Jye Smith from QUT's School of Physical and Chemical Sciences has developed a new diagnostic technique using bioimpedance spectroscopy to diagnose cervical and skin cancers.

Bioimpedance measures the electrical characteristics of biological tissue and is used by gyms to calculate amounts of lean tissue, water and fat.

“It has only recently been applied to biological tissue to determine healthy, cancerous or dead cells,” Mr Smith said.

“It offers the possibility of a simple device that can be run over the surface of the skin or internal organ that can quickly, cheaply and accurately record changes in cellular structure that point to cancerous changes.”

Mr Smith said the bioimpedance technique sent tiny electrical currents into the tissue.

“By running the currents through a surface it can identify the boundaries of a lesion,” he said.

“If a cell’s structure has changed, the impedance characteristics change and clinicians can use the changes to diagnose the type of lesion.”

He said the technique picked up changes inside the cells, changes in cells’ membranes and also changes in the space between cells.

“By putting all this information together, it may be possible to diagnose types of cancer along with their boundaries.”

“The beauty of this technique is that the patient doesn’t need an anaesthetic, the data is immediate, and it has the potential to be as accurate as more time-consuming, expensive techniques.

Mr Smith said further development of the technique could very well see it make its way into GP or skin clinics.

Source: Queensland University of Technology

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