

Researchers use new simple cost effective technology to unravel cancer through standard imaging

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Researchers at Maastricht University Medical Center+ (Maastricht UMC+) and the MAASTRO Clinic have developed a new medical imaging analysis method to predict the risk of dying of cancer in patients. For the first time, they have been able to make a visual fingerprint of a tumour that provides detailed information. The new technique is known as radiomics and it makes use of standard imaging technology present in every hospital. Based on the specific information acquired with radiomics, doctors can select and apply the most effective treatment for each patient. The researchers have published the promising results of their study in the prestigious journal *Nature Communications*.

Tumours can differ substantially in terms of their properties, for example their shape, size and/or composition. Medical imaging technologies, such as a CT scan, offer a simple way of making some of these properties visible. In itself, however, the image says nothing about how the [tumour](#) will develop. Now, [researchers](#) have shown that the new radiomics technique can predict tumour progress. The researchers are participating in a major international study headed jointly by Maastricht UMC+ and Harvard Medical School in Boston (US).

Unravelling secrets

The researchers quantified 440 properties taken from a total of 1019 CT scans of [lung cancer](#) and head and neck [cancer](#) patients. This involved

using sophisticated and intelligent software that transforms the tumour properties shown in a scan into clinically meaningful numbers, giving rise to a kind of blueprint for that specific tumour. "That data allows us to unravel the digital fingerprint of each separate tumour, in a manner of speaking," says Dr Philippe Lambin, professor of radiotherapy at Maastricht UMC+ and project leader. "We discovered that a subset of the lung tumours shared four characteristics related to intra-tumour heterogeneity and these cancers grew and proliferated faster than others, leading to worse patient outcomes. What really surprised us is that the exact same four characteristics - the same signature, if you like - showed up in aggressive, head and neck cancers too, again predicting a poorer survival after radiation therapy. That's exceptionally valuable information that we can use to predict the progress of the cancer, among other things. We can now identify patients who will benefit from stronger medication, for example, while keeping treatment simple, pain-free and cost-effective."

Provided by Radboud University Nijmegen

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