

New non-invasive skin cancer test put to the test

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Researchers have developed a new non-invasive technique which can accurately detect malignant melanoma without a biopsy.

The report, published online in *Nature Scientific Reports* on August 11, showed that a special technique using a laser to detect the subtle differences in blood flow beneath the skin enabled researchers to tell the difference between malignant melanoma and non-cancerous moles.

During the study, led by Lancaster University and Pisa University in Italy, 55 patients with atypical moles agreed to have their skin monitored by researchers at Pisa University Hospital using a laser Doppler system.

The laser Doppler was used to record the complex interactions taking place in the minute blood vessels beneath their suspicious mole for around 30 minutes.

The fluctuations in recorded signals were then analysed using methods developed by physicists at Lancaster University.

The patients in the study then went on to have their moles biopsied and the results were compared with the information obtained – noninvasively – using the laser Doppler scan.

The [laser](#) Doppler signal correctly identified 100% of the patients with malignant skin.

Professor Aneta Stefanovska of Lancaster University said: "We used our

knowledge of [blood flow](#) dynamics to pick up on markers which were consistently different in the blood vessels supplying malignant moles and those beneath normal skin.

"Combining the new dynamical biomarkers we created a test which, based on the number of subjects tested to date, has 100% sensitivity and 90.9% specificity, which means that melanoma is identified in all cases where it is present, and ruled out in 90.9% of cases where it is not."

Professor Marco Rossi of Pisa University said: "Skin [malignant melanoma](#) is a particularly aggressive cancer associated with quick [blood vessel](#) growth which means early diagnosis is vital for a good prognosis. The current diagnostic tools of examination by doctors followed by biopsy inevitably leads to many unnecessary invasive excisions.

"This simple, accurate, in vivo distinction between malignant melanoma and atypical moles may lead to a substantial reduction in the number of biopsies currently undertaken."

More information: "Dynamic markers based on blood perfusion fluctuations for selecting skin melanocytic lesions for biopsy." *Scientific Reports* 5, [DOI: 10.1038/srep12825](https://doi.org/10.1038/srep12825)

Provided by Lancaster University

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