# Scientists Develop New Technology To Detect Cancer

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Researchers at the University of Liverpool have developed a breakthrough technology that identifies molecular markers in early lung cancer.
The new technology, created in collaboration with SEQUENOM, developers of genetic analysis products, and Methexis Genomics, uses a DNA analysis technique called methylation profiling to detect cells in the lung that are likely to become cancerous.

There are a number of genetic mechanisms that can alter the characteristics of a normal cell and change it into a cancer cell. One of these mechanisms is methylation, which causes a change in the DNA structure of particular genes and results in altering its control – this may switch the gene on or off at the wrong time in the cell cycle.

Dr Lakis Liloglou, Head of the University's Lung Cancer Molecular Biomarkers Group, explains: "This is of particular importance in lung cancer research, as the changes in methylation status of the DNA are considered to be a marker for early disease detection.

"Even though DNA methylation analysis has been a previous area of research, prior techniques had a range of technical limitations, that prevented them from being of any real clinical use. This newly developed method overcomes many of the problems and combines the sensitivity of high-powered microscopes with the capability of analysing many samples at a time."

As part of their research to develop the new technology, the team, based at the University of Liverpool Cancer Research Centre, analysed the methylation profile of 47 genes in lung specimens from 48 patients with a history of smoking. The genes that were selected were known to be involved in cancer development and in this study they were able to accurately determine the relationship between gene methylation in normal and tumour tissue, which in the long term will be of enormous value in identifying high risk individuals.

Professor John Field, Director of the Roy Castle Lung Cancer Research Programme, said: "Early detection of lung cancer is the prime objective of our research programme. This depends on the identification of early biomarkers in patients who are at risk of developing the disease prior to clinical symptoms.

"The partnership between the University and Sequenom has provided a breakthrough in our goal to detect early genetic changes in individuals who are at the highest risk."

The research is being presented this week at the 96th annual meeting of the American Association for Cancer Research (AACR) in Anaheim, California.

Source: University of Liverpool