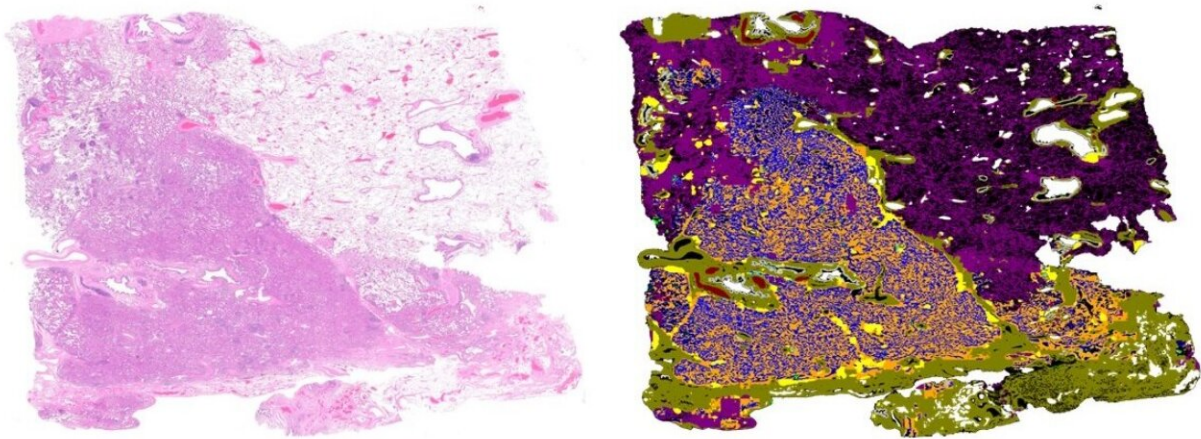# AI platform enhances lung cancer diagnosis accuracy

August 23 2024, by Mathias Martin

The image shows how the algorithm initially processes the typically stained tissue section (left) and creates a map in which different tissue types can be seen in different colors (blue is the tumor, in this case an adenocarcinoma of the lung). Credit: Dr. Yuri Tolkach

A team of researchers from the University of Cologne's Faculty of Medicine and University Hospital Cologne, led by Dr. Yuri Tolkach and Professor Dr. Reinhard Büttner, has created a digital pathology platform based on artificial intelligence. The platform uses new algorithms developed by the team and enables fully automated analysis of tissue sections from lung cancer patients.

The [platform](#) makes it possible to analyze digitized [tissue samples](#) on the computer for lung tumors more quickly and accurately than before. The study "Next generation lung cancer pathology: development and validation of diagnostic and prognostic algorithms" has been [published](#) in the journal *Cell Reports Medicine*.

Lung cancer is one of the most common tumors/cancers in humans and has a very high mortality rate. Today, the choice of treatment for patients with lung cancer is determined by pathological examination. Pathologists can also identify molecularly specific genetic changes that allow for personalized therapy.

Over the past few years, pathology has undergone a digital transformation. As a result, microscopes are no longer needed. Typical tissue sections are digitized and then analyzed on a computer screen.

Digitalization is crucial for the application of advanced analytical methods based on artificial intelligence. By using [artificial intelligence](#), additional information about a cancer can be extracted from pathological tissue sections—something that would not be possible without AI technology.

"We also show how the platform could be used to develop new clinical tools. The new tools can not only improve the quality of diagnosis, but also provide new types of information about the patient's disease, such as how the patient is responding to treatment," explained physician Dr. Yuri Tolkach from the Institute of General Pathology and Pathological Anatomy at University Hospital Cologne, who led the study.

In order to prove the broad applicability of the platform, the research team will conduct a validation study together with five pathological institutes in Germany, Austria and Japan.

More information: Next generation lung cancer pathology: development and validation of diagnostic and prognostic algorithms, *Cell Reports Medicine* (2024). DOI: 10.1016/j.xcrm.2024.101697. www.cell.com/cell-reports-medi … 2666-3791(24)00418-X

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