

'Scent device' could help detect bladder cancer

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Researchers from the University of Liverpool and University of the West of England, (UWE Bristol), have built a device that can read odours in urine to help diagnose patients with early signs of bladder cancer.

There are currently no reliable [biomarkers](#) to screen patients for bladder cancer in the same way that there are for breast and cervical cancers. Previous research has suggested that a particular [odour](#) in the urine could be detected by dogs trained to recognise the scent, indicating that methods of diagnoses could be based on the smell of certain [gases](#).

The team have now built a device, called ODOREADER that contains a sensor which responds to chemicals in gas emitted from urine. The device, constructed in the laboratories at UWE Bristol's Institute of Biosensor Technology, analyses this gas and produces a 'profile' of the chemicals in urine that can be read by scientists to diagnose the presence of cancer cells in the bladder.

Professor Chris Probert, from the University of Liverpool's Institute of Translational Medicine, explains: "Each year approximately 10,000 people in the UK are diagnosed with bladder cancer. It is a disease that, if caught early, can be treated effectively, but unfortunately we do not have any early [screening methods](#) other than diagnosis through [urine tests](#) at the stage when it starts to become a problem."

The device works by inserting a bottle containing the [urine sample](#) into the device. About 30 minutes later the ODOREADER is capable of showing the diagnosis on the [computer screen](#) if the sample derives from a patient with bladder cancer.

Professor Norman Ratcliffe, from the Institute of Biosensor Technology at UWE Bristol, said: "It is thought that dogs can smell cancer, but this is

obviously not a practical way for hospitals to diagnose the disease. Taking this principle, however, we have developed a device that can give us a profile of the odour in urine. It reads the gases that chemicals in the urine can give off when the sample is heated."

Professor Probert added: "We looked at 98 samples of urine to develop the device, and tested it on 24 patient samples known to have cancer and 74 samples that have urological symptoms, but no cancer. The device correctly assigned 100% of cancer patients.

"Bladder cancer is said to be the most expensive cancer to treat, due to repeated scopes to inspect the development of the [cancer cells](#) in the bladder. ODOREADER has the potential to dramatically cut these costs by preventing scopes.

"These results are very encouraging for the development of new diagnostic tools for bladder cancer, but we now need to look at larger samples of patients to test the device further before it can be used in hospitals."

More information: The work, also in collaboration with Bristol Urological Institute, is published in the journal *PLOS ONE*.

Provided by University of Liverpool

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