



Owlstone

Could we soon diagnose diseases by just breathing on a sensor? Cambridge company Owlstone Nanotech thinks so and has already carried out successful feasibility studies to detect TB, asthma, colorectal cancer and inflammatory bowel disease. They are currently undertaking research on lung cancer.

The idea that your breath can provide clues about the state of your health dates back to Hippocrates, but, in the modern era, it can be traced to the double Nobel Prize winner Linus Pauling, who in 1971 identified some 250 different substances in a sample of human breath.

However the real challenge has been to identify the particular chemical signals associated with each disease. Human breath contains an incredibly complex spectrum of volatile chemicals, which vary not just from person to person, but from hour to hour within each individual. It's affected, not only by what we eat and drink, but also by the air around us. It's only now, 40 years on from Pauling's discovery, that breath capture technology and data analysis have advanced to the point where biomarkers for a range of diseases are being discovered.

But if the only means of analysing patients' breath is with expensive, lab-based equipment such as mass spectrometers, only available in specialist hospitals, the technology will be of limited use. To truly revolutionise healthcare, we need a means of carrying out this analysis in doctors'

surgeries and - eventually - the home. This is where Owlstone's technology comes in.

The Owlstone story began in 2004, when Andrew Koehl, a PhD student in the engineering department at Cambridge University, came up with the design for a miniaturised ion mobility spectrometer. In the post 9/11 environment, there was an appetite for a device that could detect trace amounts of chemical weapons and explosives, so Koehl put his PhD on hold and teamed up with fellow researchers, David Ruiz-Alonso and Billy Boyle, to launch Owlstone.

Initially, they focused on the defence and homeland security markets. The company only began to explore the possibility of medical applications for the detector in recent years. They've achieved a great deal in the past two and a half years, but their work is far from over. They continue to work with researchers and clinicians to identify chemical markers for yet more diseases and they are determined to further miniaturise the technology, making it even more practically useful. By succeeding in both of these aims, they promise to revolutionise the way we diagnose disease.

Image: The Owlstone FAIMS chip beside a 5p coin