



Google in Mountain View, California, is interested in an invention from Dortmund

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The invention of a Dortmund company is currently attracting attention worldwide. Even the internet giant Google is interested – for a special reason

From Peter Wulle

They are specialists who have been developing and manufacturing high-tech instruments at the TechnologyCenterDortmund for years. They sell their products worldwide. Customers include the pasta producer Barilla, the Radeberger-Group, Toyota and the aircraft manufacturer Airbus. So, there is nothing special when the analytical measuring devices from G.A.S., Gesellschaft für Analytische Sensorsysteme mbH are in international demand. „We always sell all over the world,“ states managing director Thomas Wortelmann. However, the fact that the Internet giant Google from the USA is knocking on the door is something special for the company with only 20 employees at Otto-Hahn-Strasse 15. Google has already bought six breath analyzers from G.A.S. that may be able to sniff out a Covid-19 infection. With this „electronic dog's nose“, which can presumably diagnose a SARS-CoV-2 infection, the Dortmund researchers and developers immediately received immense media attention after a publication of an international study.

Now Google wants to map health

„We haven't achieved the breakthrough yet, but the fact that top companies like Google are choosing our measuring device is a very good sign,“ says Wortelmann. Precisely, it is the Life Science

Section of the Alphabet Group, which includes Google. The business unit is called Verily and operates in life sciences. „One of its ongoing projects deals with the collection of a wide variety of patient data, which are combined to form an overall picture of the patient. And breathing air is obviously part of it,“ says Thomas Wortelmann. From the managing director's perspective, Verily buys devices that collect information about peoples' health in a wide variety of areas. „We have mapped the world, now let's map human health“ as pointed out on the homepage of the major medical project ‚Baseline‘ that Verily initiated in the US. „This is an exciting topic for the medicine of the future. Perhaps soon it will no longer just be blood samples that provide reliable information on diseases. Regardless of the complexity of breath, important processes in the human body that have not yet been fully researched can be reflected via the lung, the largest organ of exchange with the blood. But this type of test has the tremendous advantage that sampling the breath does not need a prick compared to the blood,“ says Thomas Wortelmann. Regarding his measuring instrument, he says: „So far we have been able to show changes in exhaled air associated with Covid-19. To do this, we use a combination of a so-called gas chromatograph with an ion mobility spectrometer (GC-IMS), with which volatile organic compounds can be



Thomas Wortelmann.

determined from breath samples. The results in the Covid-19 application published together with Loughborough University are such that many doctors and researchers worldwide are interested. It now takes money and manpower to carry out serial testing on thousands of people. An innovative company like Google is certainly a suitable partner for this.

Breathing air has hardly been used for diagnostics so far

The process that Wortelmann and his researchers at G.A.S. and which is used by doctors from the Clinic in Dortmund and in Edinburgh is based only in a figurative sense on the special abilities of dogs' sense of smell, but it is significantly different. The scientists therefore do not like the comparison at all. „In view of a combination of gas

chromatograph and spectrometer, the mechanism is a physical, objective and hence an analytical measuring principle, while smelling - regardless of whether it is a dog or a human - is a physiologically and socio-culturally conditioned and therefore entirely subjective process of perception,“ emphasizes Wortelmann. The air we breathe, writes the Ärzteblatt, has hardly been used for diagnostics so far, although some diseases can easily be recognized by their smell. In the Dortmund Clinic and numerous other medical research centers around the world, the G.A.S. already tested on patients. The test with the use of the instrument is very simple: the patient blows into a small disposable plastic tube, from which the air is extracted with a simple syringe during the exhalation process and introduced into the „BreathSpec“, as the Dortmund invention is called. Breath is then simply „injected“ into the device. The analysis then runs fully automatically and without any further reagents and the results are available after a short time.

Can you have a rapid test in addition to the PCR test?

This is what makes this method so interesting as another rapid test option in addition to the antigen test. So far, 89 people in Edinburgh and Dortmund have tested whether the process works. The PCR test was positive in 31 of them. The comparison with the breath tests showed that around 80 percent of those

infected were also identified as positive. This result gives hope, but is not yet a great success in the fight against pandemics. To achieve this, a much larger number of patients must be used to find out how specific certain substances or their mixtures are for a Covid-19 infection in the breath. The breath test does not find the virus itself, but rather the metabolic processes that it has modified and that show up in the breath. This must be followed up with the current series of measurements and further researched with many PCR-tested patients. Then this innovative concept could become a quick and easy test. Infectiologist Dr. Bernhard Schaaf from the Dortmund Clinic says about the previous small study: „First we wanted to see whether a breath test for SARS-CoV-2 is even possible. And that's it!“

The strategy of G.A.S. is clear: „We do not care who pursues these challenging future issues with us. Despite our local connectedness, we have always had to act internationally. But we definitely cannot cope with such complex developments on our own, so we are looking for partners who are ready to take completely new and risky paths in the respective specialist areas,“ says Wortelmann. In this respect, the G.A.S. management would have nothing against a partner like Google taking up the ball here and adding another topic to their own success story with the technology „made in Dortmund“.