Experts cautious over Google nanoparticle project

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A Google project to develop nanoparticles that can detect cancer cells inside the body is a useful contribution but faces important hurdles, experts say

A Google project to develop nanoparticles that can detect cancer cells inside the body is a useful contribution but faces important hurdles, experts said on Wednesday.

The technology could yield "another tool in our arsenal (but) in my opinion, it won't be a game-changer in terms of diagnostics," said Agnes

Buzyn, president of France's National Cancer Institute (InCA).

Google X Lab, a special projects unit, on Tuesday said the idea is to use tailored nanoparticles—particles measured in billionths of a metre—that would stick to cancerous cells or cancerous piece of DNA.

They would also adhere to fatty deposits in the blood that can be signatures of an impending stroke or heart attack.

The particles would be swallowed in pills and thus taken into the bloodstream.

Magnetised, the particles could be drawn to a wearable device such as a wristband, where they would be counted.

Other labs are already hard at work at exploring the potential nanoparticles, experts noted.

"The idea isn't new," said Laurent Levy, founder and chairman of a French company, Nanobiotix, which is looking at the use of nanoparticles in cancer radiotherapy.

"It's not science fiction—it is achievable," he told AFP, saying that the technology is likely to start coming on stream within a decade.

Scientists at Britain's Imperial College London are already working with specially-coated nanoparticles that interact with cancerous cells.

Reaction causes the nanoparticle to self-assemble into a larger particle, from 100 to 800 nanometres—still small enough not to cause any harm, but boosting the chance of making a small, early tumour visible with magnetic resonance imaging (MRI) scanning.

The work means that existing scanning technology could be used.

"By improving the sensitivity of an MRI examination, our aim is to help doctors spot something that might be cancerous much more quickly," Nicholas Long, a professor of chemistry, said when the research was published in July.

"(...) Some doctors feel that even though MRI scanners are effective at spotting large tumours, they are perhaps not as good at detecting smaller tumours in the early stages."

Like any medical innovation, diagnostic nanoparticles will have to be closely vetted for safety and effectiveness.

One familiar hurdle in this field is "false positives," when a test wrongly says there is cancer.

"False positives" have dogged the PSA test for prostate cancer.

Higher levels of prostate-specific antigen (PSA), a protein produced by the prostate gland, are the telltale sought in the test—but they can surge even when a man does not have cancer.

And even an accurate test for cancer is not in itself a requirement that the person needs treatment.

Although screening for breast cancer is highly recommended, some women end up having invasive treatment for tumours that are small and slow-growing and would not be fatal.

As a result, human expertise cannot be discounted, said Buzyn.

"Diagnosis, prognosis, disease evaluation, all of these are carried out on

the basis of basket of factors—genes, risky behaviour, the patient's immune system and so on," she said.