

Flexible research leads to pocket PCR test for COVID-19

While researchers were busy developing a handheld device to rapidly detect biomarkers to guide the therapy in lung cancer, the pandemic struck. Realising their device could be adapted to test for coronavirus, researchers refocused their work. The result is the market's smallest portable PCR device.



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Sometimes in research you start trying to solve one problem, only to end up solving another. The LungCARD project, undertaken with the support of the [Marie Skłodowska-Curie Actions](#), is a case in point.

The project originally set out to develop a point-of-care companion diagnostic solution capable of supporting treatment for lung cancer patients. “Lung cancer is the most common type of cancer worldwide,” says Orfeu Flores, CEO at STAB VIDA, the project’s coordinating partner.

According to Flores, non-small cell lung cancer (NSCLC) accounts for 75 % of all lung cancers. “The type of treatment a patient receives is largely dependent on mutation testing,” he explains. “This means screening the patient for specific biomarkers, in this case mutations in the EGFR gene.”

Traditionally, this screening is done in a number of ways, including DNA amplification technologies such as PCR and LAMP, both of which test for the presence of specific mutations in the tumour. The problem with this approach is that it requires a biopsy, a procedure that many lung cancer patients are simply too sick to undergo.

“By developing an automatic system that can detect EGFR mutations using a simple blood test, we were able to eliminate the need for biopsy for EGFR testing,” remarks Flores.

The doctor is in

While this initial iteration of the LungCARD proved to be better able to detect the relevant biomarkers, there was still room for improvement. So, the STAB VIDA team went back to the drawing board.

The goal this time: to advance the LungCARD into a complete point-of-care test capable of rapidly detecting EGFR mutations – a capability that would help clinicians accurately select the best therapy for NSCLC patients.

“The result of this effort is Doctor Vida, a portable, handheld device that can be operated from any smartphone,” adds Flores.

While Doctor Vida was undergoing clinical trials for point-of-care EGFR testing, the COVID-19 pandemic hit. “We quickly realised our solution had the potential to diagnose this new disease, so we pivoted,” notes Flores.

Today, Doctor Vida Pocket is the market’s smallest portable PCR device for diagnosing COVID-19. “It is a unique, all-in-one kit for sample collection and testing that delivers results via a mobile application in less than one hour,” says Flores.

Doctor Vida Pocket is currently available in all continents, not only for COVID-19, but also for lactose and gluten intolerance screening and testing for diseases such as HIV, HPV and legionella.

The device is also being used by veterinarians for rapid and convenient testing of animal disease, while in Peru, the International Potato Centre is using it to detect a potato virus.

From lung cancer to COVID-19

Flores says the project is a case study in the importance of flexibility in research. “We started with one technology for therapy guidance in lung cancer and ended up using another technology for diagnosing COVID-19,” says Flores.

The STAB VIDA team continues to develop the Doctor Vida Pocket device, adapting it to different sample types, including blood and plasma. The company is also working on the original LungCARD, with a focus on designing a new experimental strategy for detecting relevant mutations associated with lung cancer.

Project details

Project acronym: LungCARD

Project number: 734790

Project coordinator: Portugal

Project participants: Poland, Portugal, Serbia, Spain, Türkiye, United Kingdom

Total cost: 1039500

EU Contribution: 976500

Project duration: January 2017 to October 2022

See also

[More information about project LungCARD](#)

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