

World

# How a DNA Test Machine Mutated to Find Covid in 90 Minutes

By [John Lauerman](#)

6 August 2020, 05:00 BST

- ▶ [Nutrition startup gets \\$211 million deal after pandemic retool](#)
- ▶ [Nudgebox will be rolled out to hundreds of NHS hospitals](#)

0:00 / 6:51



WATCH: Toumazou demonstrates his coronavirus testing machine.

LISTEN TO ARTICLE

▶ 5:04

## In this article

0140739D  
**IMPERIAL COLLEGE LONDON**  
 Private Company

GBP  
**British Pound Spot**  
 1.3693 GBP  
 ▲ +0.0007 +0.0511%

530167Z  
**NATIONAL HEALTH SERVICE**  
 Private Company

571951Z  
**OXFORD NANOPORE TECHNOLOGIES**  
 Private Company

654678Z  
**UNIVERSITY OF OXFORD**  
 Private Company

A small DNA-testing company that just months ago was trying to get its footing in consumer genetics is now part of an effort to make U.K. hospitals safer during the pandemic.

The company, [DnaNudge](#), won a 161-million pound (\$211 million) order for 5,000 machines and a supply of cartridges to test patients for the new coronavirus in hundreds of the National Health Service hospitals.

For founder Christofer Toumazou, a professor at [Imperial College London](#), it's the culmination of months of efforts to retool a toaster-size machine he originally developed to analyze key bits of people's DNA so users could tailor their diet to their heredity. Now his lab-in-a-box will be used to see whether patients arriving at hospitals for surgery, cancer treatment and other procedures harbor Covid-19 -- an unexpected detour in his contribution to the consumer genetics revolution.

"We could be entering a very new world when we come out on the other side of this pandemic," Toumazou said in an interview.

His machine, the Nudgebox, delivers a result in 90 minutes on the spot -- no need to ship samples to a lab -- based on either a nose swab or some saliva. It can also identify the flu and another common lung ailment known as respiratory syncytial virus.

The U.K. government this month also ordered 450,000 rapid tests from DNA testing company Oxford Nanopore Technologies. Innovative diagnostics are the latest examples of British science being deployed to fight the pandemic, along with the coronavirus vaccine being developed by the University of Oxford and AstraZeneca Plc and an Oxford study that established the life-saving potential of a cheap anti-inflammatory drug called dexamethasone.

### Touchy Subject

Coronavirus testing has become a sensitive topic in the U.K. after early efforts to speed up diagnosis floundered. Thousands of tests ordered last spring turned out to be flawed, preventing a scaling up of detection envisioned by Prime Minister Boris Johnson's government. Britain has suffered more than 46,000 deaths, the most of any European country.

Graham Cooke, a professor of infectious diseases at Imperial College London, said he was doubtful at first that Toumazou's device would be useful, but that it held up well under scrutiny.

"If you have someone coming in and you're not sure if they have Covid, you can make a decision about where they should go," he said. "You don't want to put the wrong person in the wrong place."

Some of the Nudgeboxes ordered have already been rolled out in eight London hospitals and health-care centers, where doctors and nurses can use them to quickly determine whether new patients should be isolated. DnaNudge may go public in a year or so, according to Toumazou.

As Toumazou, 59, watched the pandemic unfold and overwhelm NHS resources, his greatest worries were for his children, one of whom is immuno-compromised and would be at high risk if he caught Covid-19. But his thoughts also kept going back to the box whose technology was lying fallow as a result of the crisis.

### More Cash

More from

**U.K. Mulls Tighter Borders; Japan Cases Ease: Virus Update**

**Why Delaying the Second Covid Vaccine Shot Is Messy**

So he went to his biggest investor, former Thai prime minister and mobile-phone magnate Thaksin Sinawatra, who agreed to plow more cash into the business to fund the transition.

The box went from being able to analyze human DNA to the narrower task of recognizing the genetic blueprint of the SARS-CoV-2 virus. The rejig also added a feature that ensures a proper

**The latest Covid updates**

Make sense of the headlines and the outbreak's global response with the Coronavirus Daily.

Enter your email

Please enter a valid email address

Bloomberg may send me offers and promotions.

**Sign Up**

By submitting my information, I agree to the [Privacy Policy](#) and [Terms of Service](#).



The Nudgebox Source: DnaNudge



Christofer Toumazou Source: DnaNudge

### Why the Mutated Coronavirus Variants Are So Worrisome

More Than 65.5 Million Shots Given: Covid-19 Vaccine Tracker

sample has been taken -- meaning it's easy to know whether a patient needs to be retested.

Toumazou said little in his background prepared him for the fields of health or science. The son of a Greek Cypriot-immigrant family that owned restaurants in England, he saw his outlook

changed by an uncle who was an engineer.

"He inspired me," Toumazou recalled. "At that time, Greek families were either in restaurants or hairdressing, and my family were in catering. I wasn't really meant for engineering."

While his school didn't offer the exams that allow access to the U.K.'s top colleges, Toumazou enrolled in an electrical engineering program at what was then called Oxford Polytechnic.

### 'Marriage in Heaven'

There, he and his instructor John Lidgey began working on a new kind of circuit that drastically reduced the amount of power needed. As a research fellow at Imperial College London, he became the institution's youngest person to be promoted to professor, at age 33. He began using the technology in a variety of applications, including mobile phones and eventually implanted prostheses for deaf children, and became interested in the connection between tech and genetics.

Now Toumazou spends most of his days at NHS hospitals in London and Oxford, overseeing the use of Nudgeboxes for Covid. They're performing hundreds of tests each day, and he still sees more opportunities for expanding applications. The devices could be used for quick testing in airports or businesses when people come down with symptoms, for example, or to quickly check volunteers for vaccine trials.

And there's also the possibility of going back to DnaNudge's original mission -- helping people match foods to their genetic predisposition -- to avoid diabetes, kidney disease and other conditions that might make them more vulnerable to Covid.

"My dream has been to bring testing like this to the consumer," Toumazou said. "A test that can demystify and simplify that quickly -- rather than leaving people in doubt -- is going to be very useful."

Have a confidential tip for our reporters?

[GET IN TOUCH](#)

Before it's here, it's on the Bloomberg Terminal.

[LEARN MORE](#)

[Terms of Service](#) [Manage Cookies](#) [Trademarks](#) [Privacy Policy](#)  
©2021 Bloomberg L.P. All Rights Reserved  
[Careers](#) [Made in NYC](#) [Advertise](#) [Ad Choices](#) [Contact Us](#) [Help](#)