A Swift Response to a Worldwide Pandemic

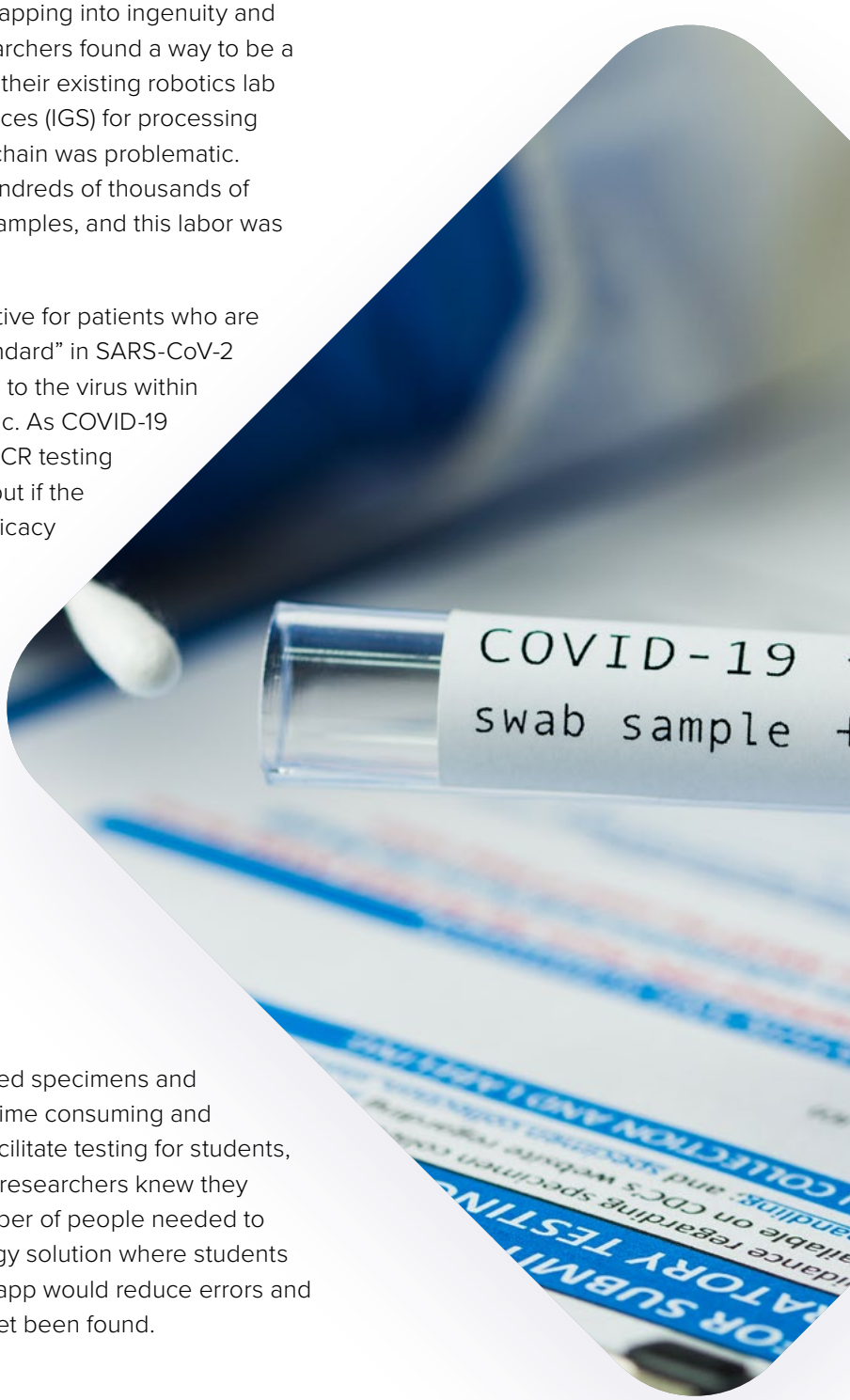
University of Maryland-Baltimore's School of Medicine Uses the Modo Platform for COVID-19 Testing

The Institute for Genome Sciences at the University of Maryland School of Medicine (UMSOM), and the University of Maryland Pathology Associates (UMPA) affiliated with the University's Medical Center and Medical System, recently partnered with Modo on a COVID testing project. The goal was to quickly develop a new app that would allow UMSOM to process vastly more COVID tests and to accelerate their mission so that statewide COVID testing efforts were more effective. What's more, UMSOM's service was needed at other colleges around the state and up to this point, no realistic solution had been found. COVID samples were still being connected to patients by hand, which was a completely untenable situation in a rapidly spreading and constantly shifting pandemic.

The School of Medicine leveraged Modo's XModule technology to create and deploy a new COVID test collection app in less than two weeks.

Researchers at the School of Medicine and around the globe have been working under intense pressure since the pandemic started, tapping into ingenuity and resourcefulness to solve problems. At UMSOM, researchers found a way to be a part of the solution for the entire state by committing their existing robotics lab equipment at the school's Institute for Genome Sciences (IGS) for processing COVID-19 PCR tests. One key link in the processing chain was problematic. It required a massive amount of labor to associate hundreds of thousands of samples with the patients who were submitting the samples, and this labor was prone to error.

Although the Antigen test, or the "rapid test," is effective for patients who are experiencing symptoms, PCR testing is the "gold standard" in SARS-CoV-2 detection; it actually detects genetic material specific to the virus within days of infection, even in those who are asymptomatic. As COVID-19 spread, speed became critical. The need to deploy PCR testing using reliable, efficient procedures took top priority, but if the results were incorrectly reported or took too long, efficacy took a nosedive.



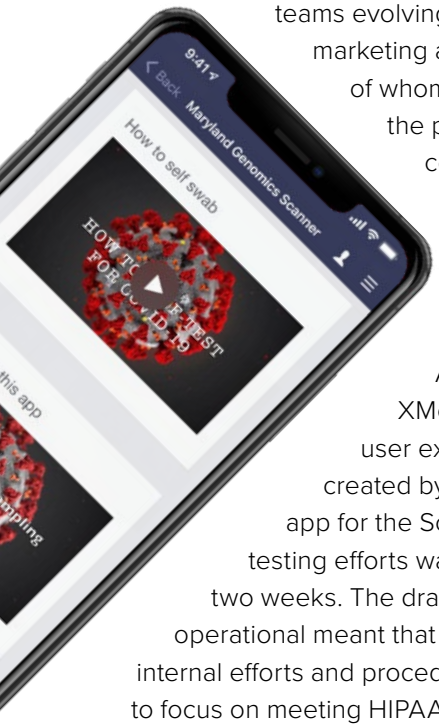
The testing procedure for COVID-19 involves several steps that require 100 percent accuracy:

- **Specimen collection**
- **Assignment of a unique medical record number (MRN) to each specimen**
- **Registration of the specimen and associated results in a tracking database**

Initially, staff at each testing location manually collected specimens and assigned MRNs by hand on paper forms, which was time consuming and prone to errors. When IGS's mandate expanded to facilitate testing for students, faculty, and staff at colleges in the state of Maryland, researchers knew they had to optimize processing time and reduce the number of people needed to complete the paperwork. They knew that a technology solution where students could collect and submit their own specimens on an app would reduce errors and eliminate paperwork, but that tech solution had not yet been found.

The team did not have the resources to create a software solution and time was of the essence. They knew that the solution had to be for mobile devices in the form of an app but developing a proprietary mobile app would either require building it in-house - knowledge the team didn't have - or hiring outside consultants who would need several months to build a solution from scratch.

Instead, they looked internally for an existing platform they could configure to their purpose. Modo, it turned out, was already being employed by the University of Maryland Baltimore as the underlying technology for the campus' app. Students, faculty, and other staff had already been relying on it to handle wayfinding, registration, and other campus processes. It had proven to be reliable and easy to customize, manage, and update on the fly. UMB teams evolving the campus app came from the marketing and admissions department, all of whom had figured out how to make the platform work for them without countless hours of programming. Taking the UMB app as a model, the UMSOM team decided Modo could work for them, too.



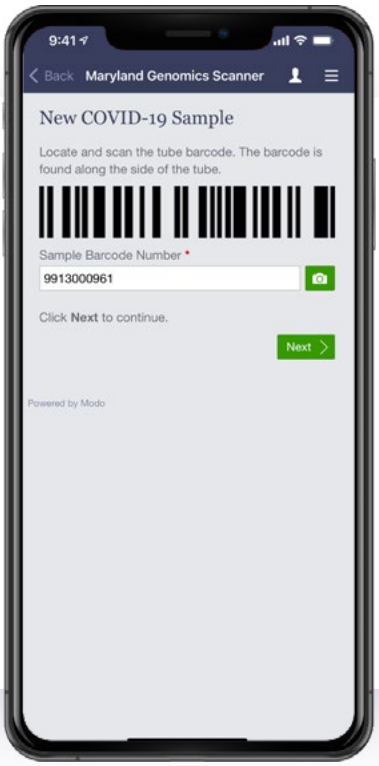
And it did. Leveraging Modo's XModule technology to drive the user experience via web services created by UMSOM, a new Modo-powered app for the School of Medicine's COVID testing efforts was up and running in less than two weeks. The dramatic time savings in getting it operational meant that staff had been able to address internal efforts and procedural planning. They were able to focus on meeting HIPAA regulations for confidentiality and data storage rather than having to develop custom native apps. Or if they had selected an outside developer, conveying those needs and then pilot testing until the final product was ready to deploy.

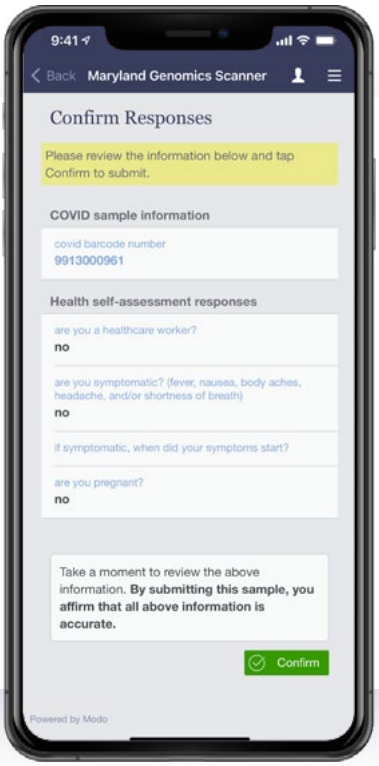
Benefits of the Modo Low-Code App Building Platform

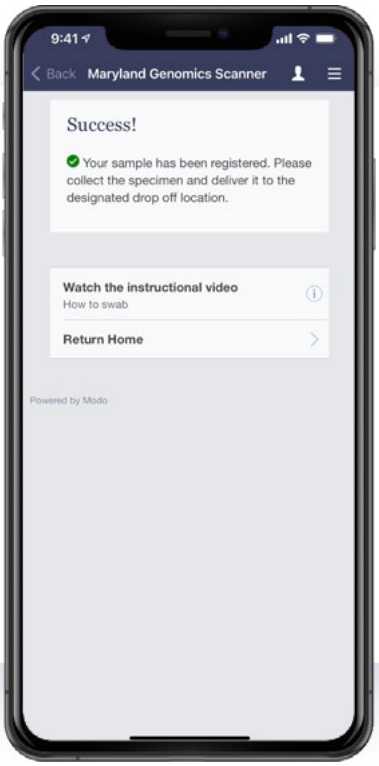
1. **Familiarity:** UMB was already using Modo for their campus app, so app builders had less of a learning curve
2. **User-Friendliness:** No native code was required, allowing non-technical subject matter experts to create app experiences
3. **Proven Solutions:** UMB was already confident in the platform agility and in Modo's ability to deliver

How it Works

At home or wherever is convenient and safe, students collect their own COVID-19 samples (usually once per week) with swabs and containers provided by their university. They match the samples with their medical record numbers with full assurance that HIPAA privacy standards are maintained. Users are only identified through the MRNs. This process used to require a trip to a testing site (at risk of more exposure to COVID-19) but now it is completed in complete privacy with greatly reduced exposure.

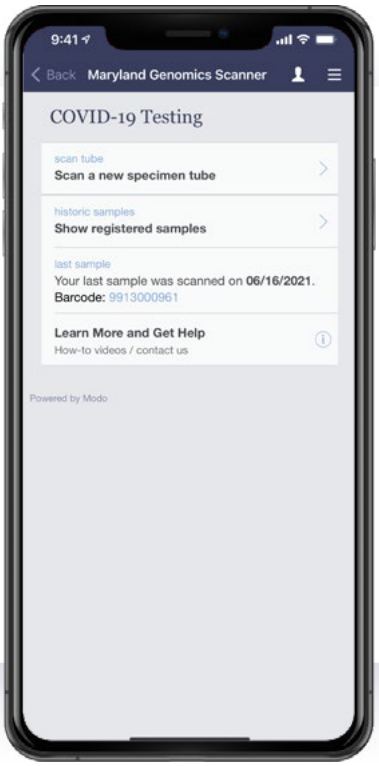






Samples are sent to the lab at UMSOM's Institute for Genome Sciences (IGS), which now has increased testing capacity thanks to new state funding. Samples are analyzed at the University of Maryland Pathology Associates (UMPA) which is CLIA/CAP accredited and operated by the UMSOM Department of Pathology.

Students can see their results on the app within 1-3 days. This faster result is important on many levels, such as for the NCAA, which uses both PCR and Antigen testing to ensure that college athletes are safe to compete.



Since being deployed in 2021, UMSOM's Modo-powered COVID testing app has been used by more than 7,500 users, with over 100,000 tests processed.

Future Adaptations

As more people are vaccinated and the number of needed COVID tests decreases, UMSOM researchers have already envisioned additional innovative uses for the Modo platform. One use already in development is for a clinical trial to determine viral load and transmission patterns and rates for vaccinated individuals. The flexibility of Modo's platform enabling UMSOM to easily reconfigure, evolve, and extend their app means this and other extensions are possible, allowing them to be as helpful as possible in addressing local and global responses.

With the right tools that are adaptable and secure, it's possible to keep up with the rapidly shifting landscape that is our reality in this pandemic. The University of Maryland SOM reports that Modo's convenience, agility, reliability, and enterprise-grade scalability enabled them to tackle what had originally felt like an insurmountable problem given their limited resources and timeframe.

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