



Max &amp; Jules Photography For The Innovative Genomics Institute

# The Innovative Genomics Institute Pivots to Combat the COVID-19 Pandemic

Research institute leveraged Zebra barcode printers, labels and scanners to convert a genome research laboratory into a COVID-19 diagnostic testing lab

The Innovative Genomics Institute (IGI) was established in 2014 as a partnership between the University of California, Berkeley and the University of California, San Francisco. The driving belief at IGI is that genome engineering has the potential to solve some of humanity's greatest problems. With the institute's humanitarian focus, it may come as no surprise that when the COVID-19 outbreak happened, IGI leadership convened to figure out what they could do to help mitigate the crisis.

"Testing was one of the most obvious gaps in managing the COVID-19 outbreak," says Ariana Hirsh, Lab Operations Manager at IGI. "Testing is important for so many reasons, and we felt that this was one way we could help track the disease and collect data to help stop the spread."

## Converting Into a Testing Facility

IGI facilities were set up for genome research, not specimen testing. Quickly, lab managers set out to convert one of their labs to meet goals for testing up to 1,000 specimens per day and delivering results to patients in less than 24 hours.

Organizers started by gathering experts from IGI's academic network to optimize the technical aspects, as well as reaching out for volunteers. The lab also had to borrow multiple pieces of scientific equipment from several UC Berkeley departments to enable qPCR (quantitative Polymerase Chain Reaction) analysis for testing specimens.

With a roster of 800 willing volunteers, a staff of 35 researchers and the testing equipment secured, IGI only needed to establish the workflows—a process which proved to be a true learning experience.

### SUMMARY



#### Customer

The Innovative Genomics Institute  
Berkeley, CA

#### Industry

Medical/Healthcare

#### Challenge

Creating an accurate, efficient and safe lab environment to manage high throughput leveraging integrated print-scan solutions

#### Solution

- Scanners: DS8178-HC, DS8108-HC, DS4608-HC
- Scanner mounts, cradles and accessories
- Zebra ZD420 Thermal and Healthcare desktop printers
- Zebra wax/resin ribbons
- Zebra OneCare® for technical support and repair coverage

#### Results

- Automated processes for greater speed and data reliability
- More accurate data collection and tracking for positive patient identification
- Increased efficiencies in scanning, beginning with more reliable labels
- Safer workflows to protect lab and field workers

## SUCCESS STORY

THE INNOVATIVE GENOMICS INSTITUTE

### Level-Setting Workflows

Workflows for efficient and accurate specimen testing involve numerous tasks that connect patients, healthcare providers and lab technicians in a two-way chain of communication. Any weak link in the workflow can cause significant challenges, such as untestable specimen samples, delays in reporting, inaccurate diagnoses and increased lab costs.

IGI already had the expertise to implement the scientific technicalities of testing specimen samples. The test kits developed included swabs, tubes and other items to protect the sample integrity, as well as documentation, with barcode labeling to connect with their Laboratory Information Management System (LIMS) system.

As a first-time testing facility, lab managers were unfamiliar with the tools and processes to scale testing, in addition to ensuring positive patient identification. Organizers initially looked at rudimentary barcode technology to determine if it could be adopted for specimen tracking and reporting. However, product performance immediately became an issue.

### Navigating the Learning Curve

“It’s been a process of trial and error,” Hirsh says. “We assumed all barcode scanners were pretty much the same, but it quickly became clear that it wasn’t something you can grab off the shelf and expect to deliver the best results.”

Over-the-counter scanners continually dropped barcode letters during scanning, leading to incorrect readings and duplicate work. The printers and labels were not optimized to work together, resulting in wrong-sized labels for their specimen tubes with not enough white space around the barcode to support consistent reads, especially with finicky scanners already built into some of their equipment.

One of the most challenging issues was the labels’ lack of resistance to cleaners. For safety, technicians need to sanitize the outside of the tubes when the filled samples arrive from clinical settings. When technicians sprayed the tubes to disinfect them, the barcode wiped off.

“We quickly realized how much we needed barcode and scanning solutions that are designed to withstand a variety of environments from the field to the lab,” Hirsh says

“We quickly realized how much we needed barcode and scanning solutions that are designed to withstand a variety of environments from the field to the lab.”

**Ariana Hirsh,**  
**Lab Operations**  
**Manager, IGI**





Max & Jules Photography For The Innovative Genomics Institute

### Getting Expert Assistance

IGI reached out to Zebra by calling Zebra’s customer service number and leveraging relationships with alumni working with Zebra, which led to conversations with a Zebra customer service representative, sales engineer and a reseller in the Berkeley area.

With Zebra’s commitment to creating partnerships that foster social responsibility in corporations and innovation in science and healthcare, it was a natural fit to work with IGI. Together, Zebra and IGI explored several possible solutions for what IGI wanted to achieve, including how to best support collection sites in the field and technicians in the lab with durable scan and print technology.

IGI chose Zebra scanners because they withstand accidental drops, chemical-based disinfectants, and repeated wipe downs. Zebra solutions also enabled technicians to read labels through plastic bags, reducing how many times test kits are opened and closed, and increasing safety by preventing samples from being touched or contaminated.

---

“With support from Zebra and using Zebra solutions, we have the right tools in place so that we can make a significant impact within the community”

---

Lab managers chose Zebra barcode labels to maintain readability after being wiped with disinfectants. They also implemented accessories for different use cases and a solution for optimizing how their printers, ribbons, and barcode labels work together. Each product works seamlessly with each other for an integrated solution supporting every step of the workflow.

To complete its integrated platform, IGI adopted solutions specifically for the healthcare environment, including thermal and healthcare printers for reliable printing and wax/resin ribbons for durability. Technical support and repair coverage also provided assistance throughout the lab’s journey.

“With the expertise provided by Zebra, along with the quality of the solutions, we have a true end-to-end solution to manage testing,” Hirsh says. “We have the durability and reliability we need, within the lab and beyond, to support faster testing to meet our goals.”

## SUCCESS STORY

THE INNOVATIVE GENOMICS INSTITUTE

### Scaling Testing and Preparing for The Future

Initially, IGI had mostly tested symptomatic patients. Because the number of symptomatic patients in the Berkeley area was low, IGI was testing approximately 100 specimens per day. However, as people gradually venture back into the community, IGI has ramped up testing. IGI has successfully automated workflows and can now process over 1,000 tests per day.

With the help of the Zebra solution, manual processes—including documentation at the collection sites—are automated to make collection and processing safer and more efficient. IGI can help ensure more accurate data collection and reporting in the field, as well as positive patient identification. Turnaround times have also sped up—from producing specimen sample kits, to collecting and testing samples, and processing and reporting results.

“Now that we have the right tests and tools at all of our collection sites and the lab, we can be much more agile with testing,” Hirsh says. “We’re confident that we can now scale up as demand increases.”

Having established a scalable workflow, IGI’s efforts won’t stop at testing. Future work includes surveillance studies and additional research to foster a deeper understanding of the pandemic. IGI is also developing less invasive saliva-based testing to help combat the pandemic and monitor for any potential resurgence of COVID-19.

“With support from Zebra and using Zebra solutions, we have the right tools in place so that we can make a significant impact within the community,” Hirsh says. “There’s a lot more we can do.”



Max & Jules Photography For The Innovative Genomics Institute

To learn more [visit zebra.com](https://zebra.com)



**NA and Corporate Headquarters**  
+1 800 423 0442  
[inquiry4@zebra.com](mailto:inquiry4@zebra.com)

**Asia-Pacific Headquarters**  
+65 6858 0722  
[contact.apac@zebra.com](mailto:contact.apac@zebra.com)

**EMEA Headquarters**  
[zebra.com/locations](https://zebra.com/locations)  
[contact.emea@zebra.com](mailto:contact.emea@zebra.com)

**Latin America Headquarters**  
+1 786 245 3934  
[la.contactme@zebra.com](mailto:la.contactme@zebra.com)

ZEBRA and the stylized Zebra head are trademarks of Zebra Technologies Corporation, registered in many jurisdictions worldwide. All other trademarks are the property of their respective owners. ©2020 Zebra Technologies Corporation and/or its affiliates. All rights reserved.

07/01/2020