

Lions Gift of Sight **CASE STUDY**



Lions Gift of Sight eye bank is part of the University of Minnesota's Department of Ophthalmology and Visual neurosciences. They obtain, evaluate, and distribute cornea tissue for research, education, and transplant purposes. The eye bank tissue processing team was searching for a high-resolution camera that could be positioned where they needed it but at an affordable price point. They were working with expensive and slow technology that limited their evaluation capabilities. A camera manufacturer connected them with Sensors Incorporated (Sensors). Together, the businesses came up with a goal to increase evaluation throughput, simplify a cumbersome process, and deliver an application with a lower price point so partner eye banks across the nation could afford to have clear images of corneas.



We needed an automated, quick way to measure how much of the cornea is alive and going to be useful.



CHALLENGES

The staff at Lions Gift of Sight spend a lot of their time looking through a microscope dissecting and evaluating corneal tissues. Historically, Eye Bank technicians could either get a very objective image of a small part of the tissue or a subjective image of a large part of the cornea. There was no way to get a straightforward view of a large area of the cornea. This led to researching what might be out there and evaluating other options that would support quicker estimations of the quality of corneal tissue. Initially, the eye bank relied on a microscope that was designed to take pictures at extremely high levels of magnification for microdissection. These pictures needed

an imaging expert to interpret the findings. A process like that could take around 30 minutes to produce results. Not only that, but it was extremely expensive, coming in around \$20,000, which was unattainable for smaller eye banks with less funding. Overall, it was time-consuming and expensive and didn't deliver the best results.

Lions Gift of Sight needed a process to evaluate more tissues in less time, facilitate more lasting donations, and grant the gift of sight to people in need.



Need for imaging expert **extends the process** by up to 30 minutes



Product options are limited by **magnification and image quality** requirements



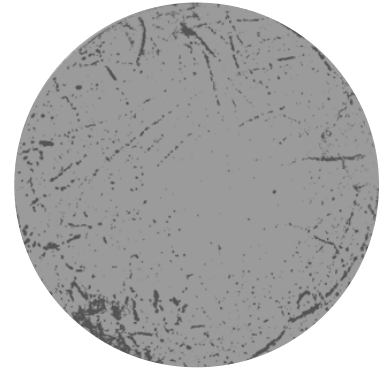
Ensure they are **utilizing funding** in the most **efficient and productive way** possible

SOLUTION

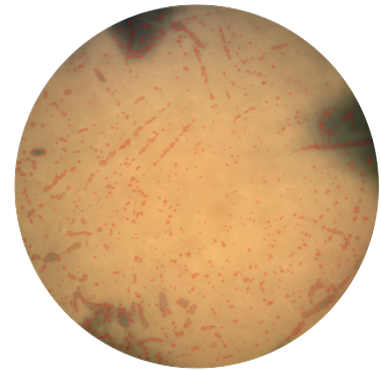
After discussing camera options, lenses, lighting, and size requirements, Sensors facilitated multiple demos to show the eye bank. The demos varied in optimal performance and size to accommodate lab space. Sensors introduced one of their suppliers, Dino-Lite, to provide an innovative cost-effective solution. Dino-Lite is a worldwide leader in quality USB digital microscope cameras and eyepieces. They could provide a very compact high-resolution camera, with lighting, optics, and adjustable settings built into the design.

The imaging was only half of the battle to make this process efficient. The experts at Lions Gift of Sight's research were also pursuing software to analyze the image after the Dino-Lite captured it. Lions Gift of Sight worked with their own software vendor to invent automated software, which was programmed to identify which parts of the tissue are alive or dead. After the new imaging solution was adjusted to fit with the software, the new process only took 30 seconds to identify the amount of living tissue. The technician takes an image of the cornea with the new machine and then selects the area to scan. The software is now doing all the heavy lifting, resulting in huge time savings.

»»
Previous solution
30 min process



»»
Dino-Lite solution
30 sec process



RESULT

The Dino-Lite application exceeded all expectations. Six eye banks across the US have implemented this application to produce images of corneas integrated with the Lions Gift of Sight eye bank software.

- Application cost less than \$5,000
- Saves several hundred hours of time
- Provides clear images
- Produces analyzed images in less than 1/60 of the speed of the previous process
- Compact enough to fit the lab

Do you have a process or application that is more of a challenge than a solution? Reach out to one of our experts to discuss how we can create the most effective solution for your needs.



763.972.1040



solutions@sensorsincorporated.com