

Success Story: Big Pharma

Challenges: High volumes of slides were causing lab backlogs and manual, labor-intensive processes slowed workflow.

Solution: Aperio digital pathology solutions digitize entire glass slides, auto-segment TMAs, and provide the information management platform for faster turnaround, improved workflow efficiencies, better archival and retrieval, and remote viewing.

It is a well-known fact that drug discovery generates masses of pathology samples, and with nearly 10,000 slides per year, the on-site lab at this leading pharmaceutical corporation faces a mountain of tissue samples. In an environment where delays in results can have million- or even billion-dollar ramifications, the company is focused on substantially improving its efficiency, quality, and throughput.

Challenges

As the volume of study requests continued to increase, this organization became less able to provide results within a narrow, targeted timeframe. It needed a way to effectively automate its processes and streamline its efforts so that it could cut turnaround times.

Adding to its challenges was the fact that pathology data management

was not effective for such a large organization with multiple sites, studies, and contract research organizations (CROs). Manual processes and a lack of barcoding hindered efficiency and made it difficult to assess where improvements could be made.

Also of concern were the high costs of peer reviews, which required all parties to be in the same room and frequently necessitated flying participants in, a costly and time-consuming endeavor.

Additionally, after a study was completed, the information contained in the tissue samples became effectively locked away, inaccessible to future studies.



The ScanScope® Solution

The company realized that if it digitized its glass slides, it would be able to automate time-consuming tasks that in a brass-and-glass environment must be done manually.

Digital slides enable an efficient workflow that is unaffected by geographical distances or time zone change. After a slide is scanned, it can be made available immediately, from anywhere. It can be annotated, analyzed, and compared side-by-side to one or more other slides.

Digitizing slides provides an excellent means for improving data management, as the digital slide and its associated data can be readily stored, organized, searched, and accessed much more easily than with glass slides.

The pharmaceutical company found an answer to its challenges with Aperio. The combination of high-throughput entire-slide digitization, a specialized tissue micro array (TMA) segmentation tool, and Aperio's state-of-the-art Spectrum™ digital pathology information management software was just what the organization was looking for. It chose Aperio's high-capacity ScanScopes for their ability to scan entire glass slides automatically, up to 120 at a time, allowing the organization to scan 24/7, even while lab technicians are home for the night.

Employment of barcode decoding alongside scanning enables efficient, one-time data entry and is an effective means to store and access data.

Aperio's TMA Lab™ software enabled the organization to handle its high volume of TMAs by quickly segmenting the array's spots, which could then be separately analyzed and managed.

Aperio's Spectrum platform product is invaluable for its ability to manage all the empirical data coming from the company's many studies. Its web-based architecture made it easier to implement and easy for users to access.

The company has seen a 25% reduction in turnaround time for standard slides, a 50% reduction for TMA slides, and sees much untapped potential still to be realized.

To improve its peer review process, the company also took advantage of the system's built-in digital slide conferencing capabilities to enable multiple parties to simultaneously review digital slides and annotations, from anywhere.

The organization's first phase involved rolling out first one and then two additional high-capacity ScanScopes at different locations, installing TMA Lab, and phasing in Spectrum as the lab adjusted to its new workflow.

Results

To date, approximately 6 months after installing the last of the initial three ScanScope systems, the organization has seen a 25% reduction in turnaround time for standard tissue slides, and a 50% reduction for TMA slides. The organization expects to see these numbers improve further, as it continues to add scanners and extend its use of Spectrum.

By using digital slide conferencing for its peer reviews, the organization estimates it is saving \$10k per review. Pathologists are also pleased to have reduced work impact, since they no longer have to travel and lose what can be days of work for one meeting.

Next Steps

Future phases for this organization involve adding more scanners to handle an even greater percentage of studies, and having its CROs install ScanScope systems as well. This will enable sharing critical data and results across physical locations, and will facilitate collaboration.

Additionally, because the majority of effort is for immunohistochemistry (IHC), the organization plans to use algorithms to automate screening and identify markers. This will enable its pathologists to concentrate on reviewing the small percentage of abnormal samples, rather than screening out the 80% or so of normal samples; it also shifts toward a more quantified assessment of IHC studies.

In all, this pharmaceutical company finds that its Aperio solution implementation has directly benefited efficiency and throughput, with much untapped potential still to be realized.

About Aperio

Aperio is digitizing pathology. We provide systems and services for digital pathology, which is a digital environment for the management and interpretation of pathology information that originates with a digital slide. Aperio's award-winning ScanScope® slide scanning systems and Spectrum™ digital pathology information management software improve the efficiency and quality of pathology services for pathologists and other professionals. Applications include education, remote viewing, archival and retrieval, basic research, and image analysis.