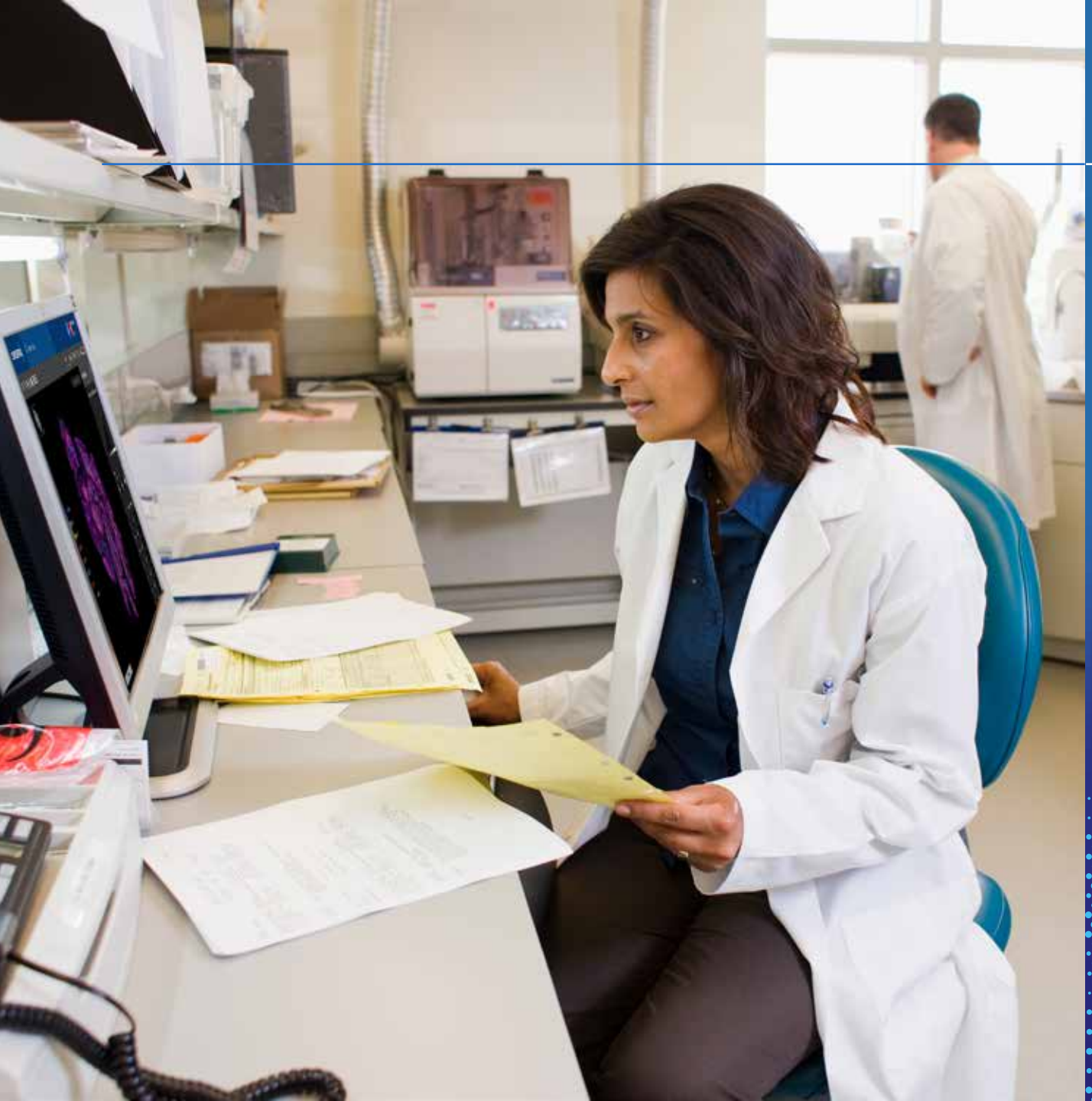
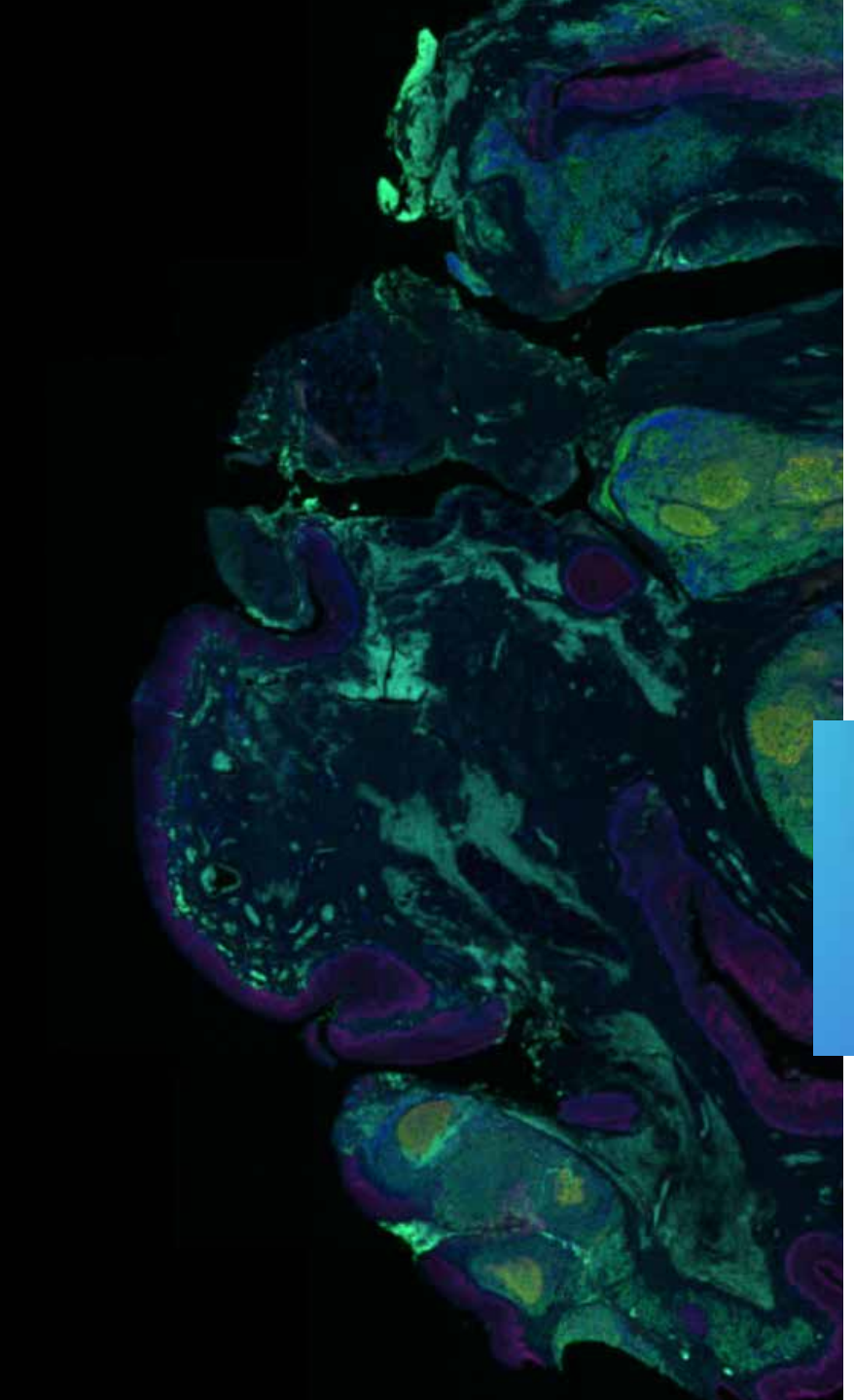


2023 LIFE SCIENCES DIGITAL
PATHOLOGY ADOPTION SURVEY

A new standard of drug research and development

PROSCIA®



Digital pathology has earned its spot on the life sciences C-suite agenda

Every drug brought to market is informed by pathology data. This critical source of information has historically been trapped on glass slides—siloed and inaccessible to many of the research activities shaping future breakthroughs—until quite recently.

Life sciences organizations have been on the forefront of digital pathology adoption to unleash the potential of this data, guided by strategic imperatives calling for data-driven research and development (R&D).

From scientific literature to conference agendas, it's clear that the shift from microscope to whole slide image is transforming operations and unlocking new insights. Digital pathology is empowering today's research teams with tools—including artificial intelligence (AI)—to deliver on the promise of precision medicine, and the organizations that continue to scale their implementations will lead the way in advancing treatment for millions of patients around the world.

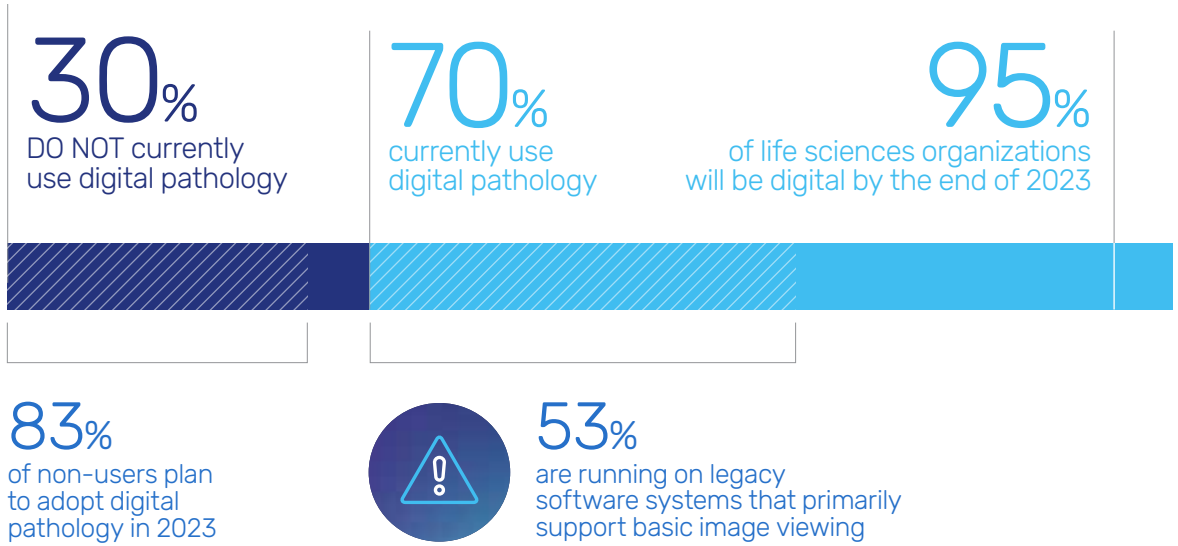
How extensively have life sciences organizations adopted digital pathology? Where have they seen the greatest benefits, and what does the future hold? That's what this survey aimed to discover.

The State of Digital Pathology Adoption

This survey asked 40 life sciences executives from the top 150 pharmaceutical companies and leading contract research organizations (CROs) about their use of digital pathology and where they're seeing value.

The majority of respondents to this survey have invested in digital pathology technology.

Digital pathology adoption



Experience with digital pathology reveals best practices

It's hardly surprising that these leaders zero in on what to look for in a digital pathology solution. Early adopters that have confronted the limitations of legacy, point-level systems are increasingly moving on to a modern, enterprise-grade platform, charting a path for others to follow.

Recognize that much-needed functionality that didn't exist a few years ago, like search, sharing, and robust image organization, is accessible now. Don't settle for software without it.

Aleksandra Zuraw

Veterinary Pathologist, Digital Pathologist, and Publisher of Digital Pathology Place

Invest in a software platform that meets your needs today and tomorrow. For us, this includes solutions for a broad set of use cases —from collaboration to GLP compliance to AI integration.

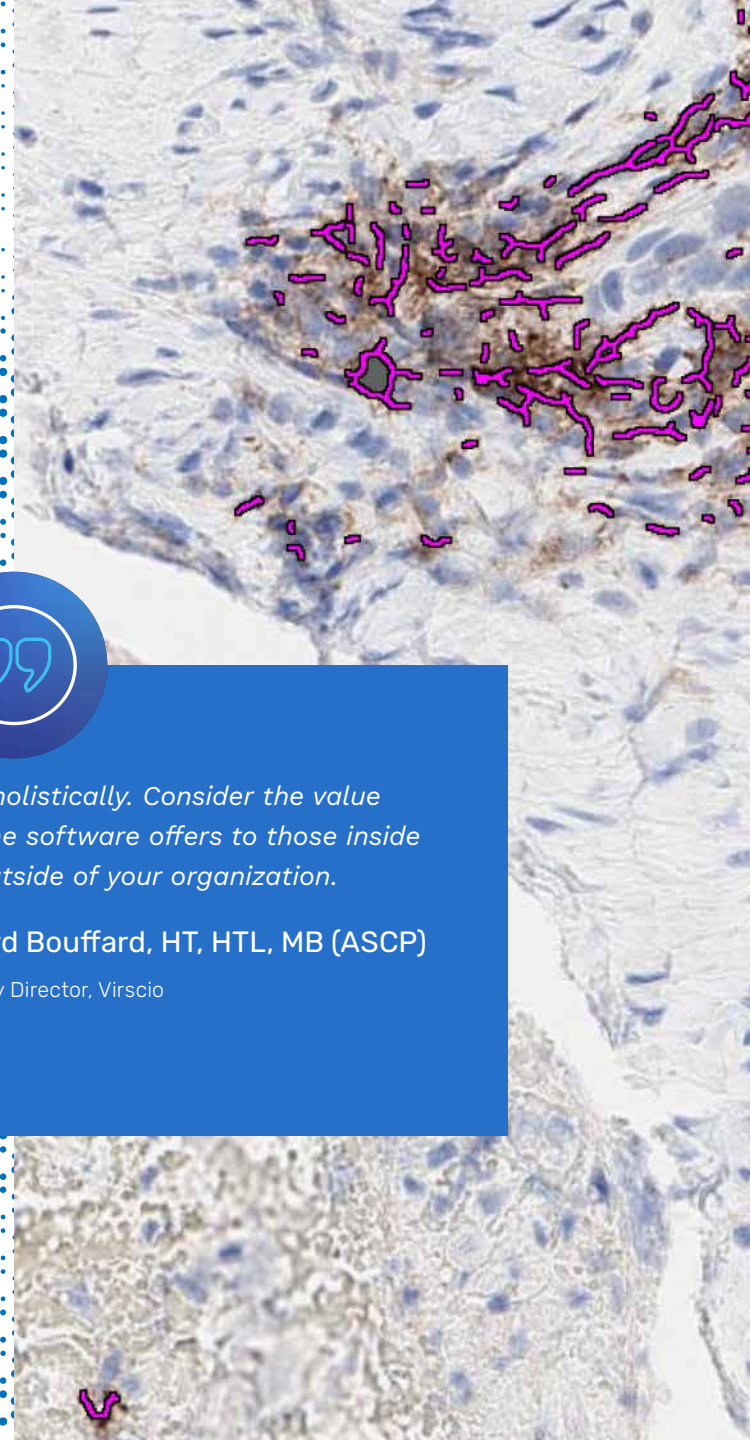
Dr. Wendell P. Davis

VP of Pathology, Altasciences

Think holistically. Consider the value that the software offers to those inside and outside of your organization.

Richard Bouffard, HT, HTL, MB (ASCP)

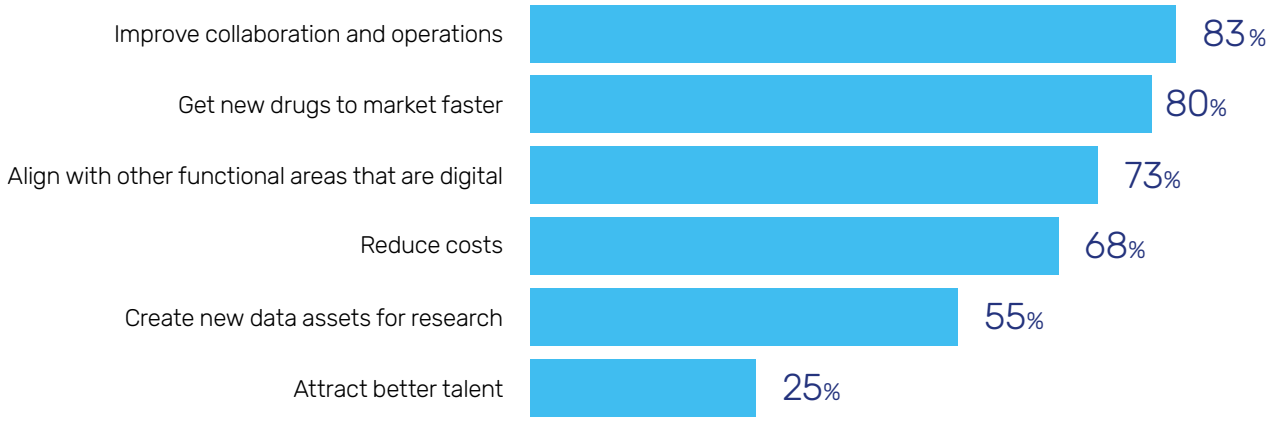
Histology Director, Virscio



Top Reasons for Going Digital

Why organizations invest in digital pathology

The survey points to many ways in which executives believe that digital pathology can deliver value, demonstrating its place on the C-level agenda.



A solution to some of R&D's biggest challenges

The average drug takes 10 to 15 years and costs $2.6 billion to introduce[1], and delays can result in more than $8 million in lost revenue per day.[2] Respondents recognize digital pathology's potential in solving these pain points. 83% called out two ways that the modern software platform is enabling teams to do so—streamlining collaboration and improving operations—which are the top reasons for adopting.

Today's research teams are often widely distributed. Plus, pharmaceutical companies increasingly rely on the expertise of CROs that must collaborate among their internal teams and sponsors. Unlike glass slides, whole slide images and the accompanying metadata can be instantly shared in a few clicks, driving efficiency and eliminating shipping costs. Among its many other benefits, a robust digital pathology platform delivers added productivity by making it easier to centralize and search the thousands, if not millions, of tissue samples that factor into R&D.

1 https://doi.org/10.1016/j.apsb.2022.02.002
2 https://doi.org/10.1016/j.apsb.2022.02.002

TOP REASONS FOR GOING DIGITAL

More generally, 80% of respondents view digital pathology as a means of getting new drugs to market faster, and 68% of respondents see going digital as a way to reduce costs. In connecting global teams and enabling them to increasingly incorporate pathology data and applications, including AI, into their workflows, the enterprise-grade platform is helping to drive higher quality decisions. Life sciences organizations can leverage these insights to accelerate R&D activities and bring drugs to market faster, reducing overhead costs.

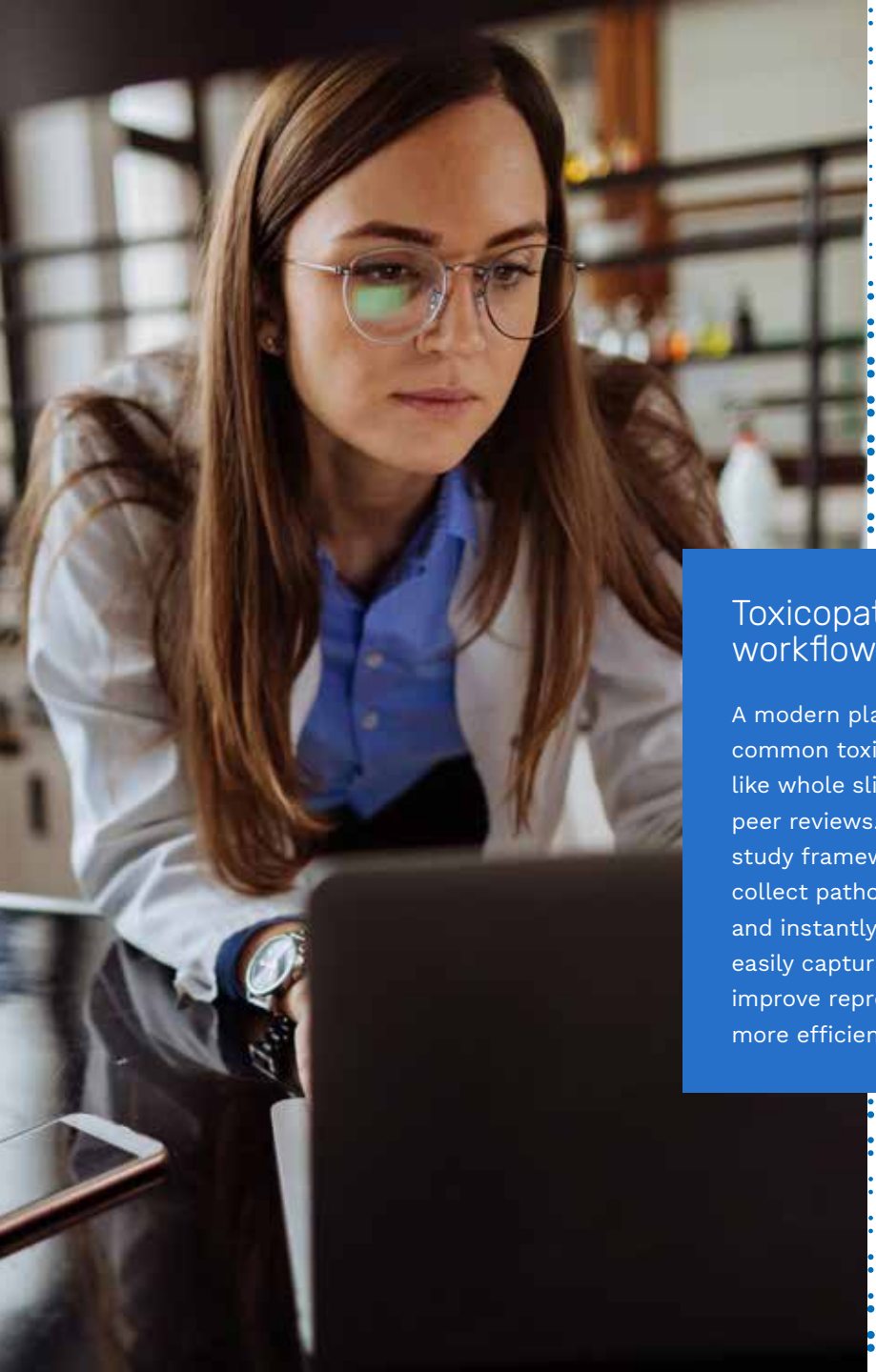
Another key finding was that 73% of respondents cited aligning with other functional areas that are already digital as a reason to adopt. These stakeholders see digital pathology as a means of responding to organization-wide calls for digital transformation. They may also be looking to capitalize on the synergies that come from analyzing radiology, genomics, and other data that is already digital in concert with pathology data, once again improving the quality of decision-making.

10–15 years
The average drug takes 10 to 15 years and costs $2.6 billion to introduce.

$8+ million
Delays can result in $8+ million in lost revenue per day.

The majority of respondents also pointed to the data opportunity that digital pathology opens up. 55% indicated that creating new real world data assets was a key reason to invest, as each whole slide image contains over one billion pixels that can inform results. This group would likely be larger if it also accounted for respondents who saw how a modern digital pathology platform enables them to better leverage their existing data assets—most of which have been trapped in glass slides.

Finally, only 25% of respondents highlighted the opportunity to attract better talent. Given that digital pathology has established itself in most life sciences organizations, job candidates may not view it as a major differentiator.



TOP REASONS FOR GOING DIGITAL

From the user's perspective

Just as executives are turning to digital pathology to address strategic priorities, individual users are realizing value in their day-to-day work.

Here are three examples:

Toxicopathology workflows

A modern platform streamlines common toxicopathology workflows like whole slide image scoring and peer reviews. Scientists can manage study frameworks, simultaneously collect pathologists' assessments, and instantly evaluate results, easily capturing structured data to improve reproducibility and drive more efficient analysis.

Spatial biology

Advancements in digital pathology enable scientists to visualize multiple biomarkers in parallel, helping them to better interpret individual cells and the surrounding microenvironment. With this insight, they gain a deeper understanding of disease progression and response to therapy.

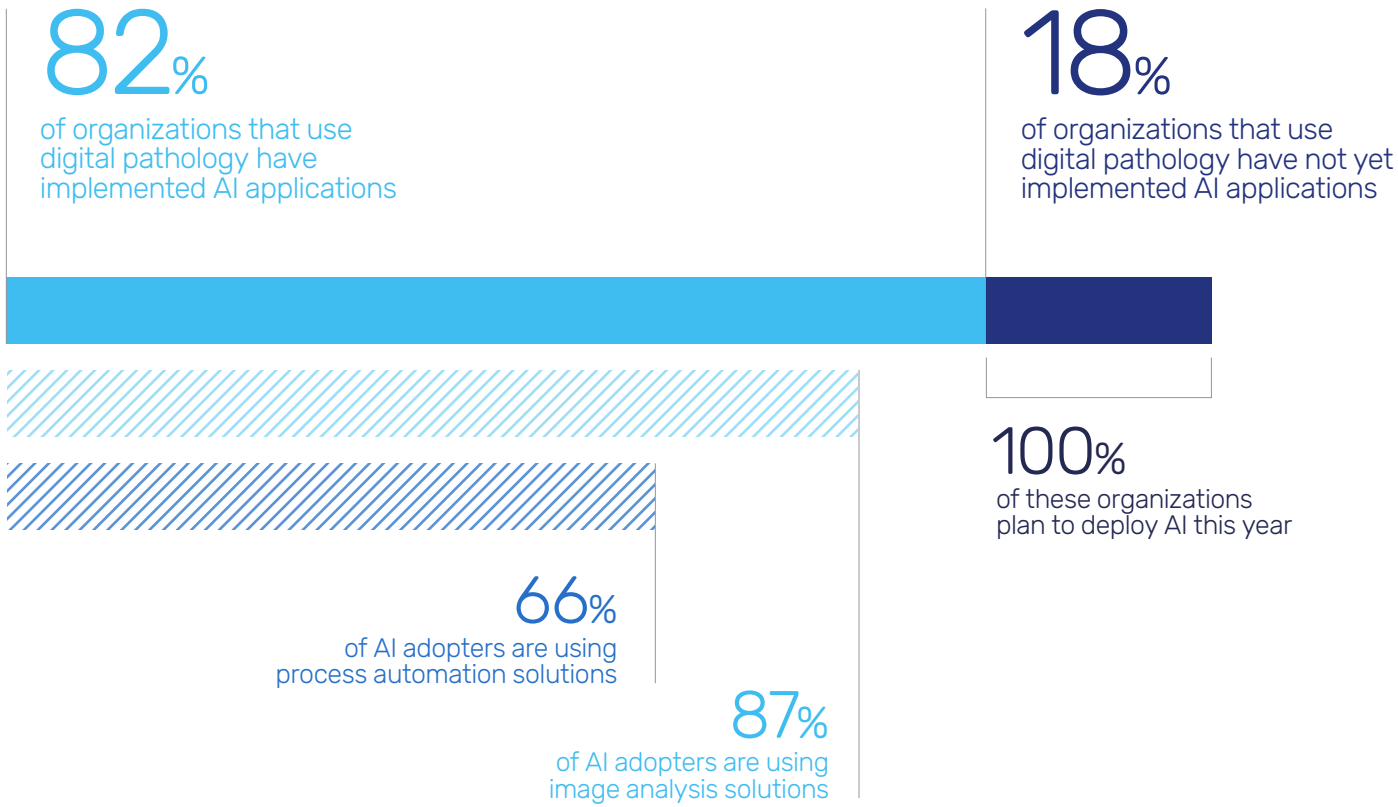
Data access

Pathology data has historically been siloed and inaccessible. In addition to serving as a single hub for pathology data across the organization, an enterprise-grade platform offers robust functionality for organizing, searching, and sharing this information, empowering scientists across the R&D value chain.

The Growing Use of AI

Efficiency and quality gains extend beyond digital pathology. Artificial intelligence (AI) can also deliver these benefits and help to unlock new insights.

How life sciences survey respondents are using AI



AI for Image Analysis

Organizations often adopt AI for image analysis as their first use case. And the justification is clear. One of the most mature areas of AI, image analysis can help scientists work more quantitatively. From assessing biomarkers like PD-L1, HER2, and Ki-67 to detecting even the smallest metastases, image analysis applications are efficiently giving scientists the accurate insights they need to better inform their research.

AI for Process Automation

It takes a well-trained technician up to eight hours to manually perform quality control on 200 whole slide images.[3] An AI application can accomplish the same quality control function in seconds. This massive efficiency gain and the resulting quality improvement mean that teams can start studies faster, reduce burnout, and increase the reproducibility of results.

The wealth of data that digitization generates opens up countless opportunities for AI-powered process automation applications that meaningfully reduce repetitive tasks when seamlessly embedded in routine workflows. This is why nearly two-thirds of organizations using AI have deployed it for process automation—and why adoption of these applications is poised for even more rapid growth.

3 https://proscia.com/my-conversation-with-dr-dan-rudmann-charles-river-laboratories-on-ai-powered-process-automation

Looking Ahead

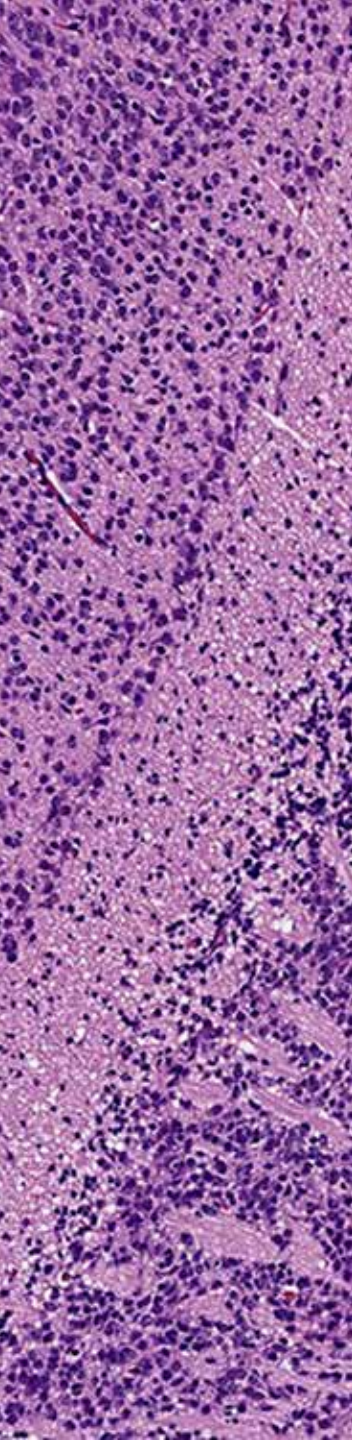
Charting the Future With the Enterprise Pathology Platform

One commonality stands out when examining the current state of digital pathology—from the reasons organizations cite for going digital to how they are using AI. That common factor is the data-driven workflow.

Data is a currency among the distributed teams collaborating to advance drug R&D. AI can only deliver value when it's applied to data and incorporated into routine operations. And the output of these data-driven workflows is new insights that can accelerate timelines and reduce costs.

The critical role of the data-driven workflow points to an imminent shift in the technology that drives digital pathology operations. Legacy software systems that primarily support basic image viewing do not power data-driven workflows at scale. Instead, the enterprise pathology platform, which unifies data, teams, and applications, including AI, will emerge as the new standard of data-driven R&D. Modern and robust, the enterprise pathology platform enables research teams to carry out their day-to-day activities today and lays a future-proof foundation for tomorrow.

With the enterprise pathology platform serving as a system of record and sitting at the center of routine operations, life sciences organizations will be fully positioned to tap into their data across the R&D value chain and advance the next wave of innovation.



Survey Methodology

This survey was conducted in February 2023 by Atheneum on Proscia's behalf. Proscia and Atheneum co-designed the survey to better understand trends around the adoption and use of digital pathology among life sciences organizations.

The survey collected responses from 40 C- and VP-level respondents from the United States, Europe, the Middle East, and Africa:

- 25 from CROs above $20M in revenue
- 15 from the top 150 pharmaceutical companies

Respondents qualified after demonstrating some familiarity with digital pathology and involvement in their organization's adoption strategy.

About Proscia

Proscia is a software company that is accelerating pathology's transition to digital, changing the way we understand and treat diseases like cancer. Its Concentriq® enterprise pathology platform powers diverse workflows, streamlines collaboration, and unlocks new insights with AI across the R&D value chain. Leading life sciences organizations, including 14 of the top 20 pharmaceutical companies, CROs, and emerging biotechs, rely on Concentriq each day.

For more information, visit **Proscia.com**.